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# NEET PG 2014 Question Paper with Answer

National Eligibility cum Entrance Test (Postgraduate)

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## 1. Anterior interosseous nerve is a branch of?

a) Radial nerve

b) Median nerve

c) Ulnar nerve

d) Axillary nerve

Correct Answer - B
Ans. is 'b' i.e., Median nerve

- Anterior interosseous nerve is a branch of median nerve.
- Anterior interosseous artery is a branch of ulnar artery.

## 2. Olecranon process of ulna helps in formation of?

a) Radial notch

b) Trochlear notch

c) Olecranon fossa

d) Coronoid fossa.

Correct Answer - B
Ans. is 'b' i.e., Trochlear notch

- Inner surface of olecranon process forms trochlear notch for articulation of trochlea of humerus.
- Radial notch is seen in lateral part of upper end of shaft (not on olecronon).
- Olecranon fossa and coronoid fossa are part of lower end of humerus.

## 3. True about clavicle?

a) Endochondral ossification

b) Vertical

c) No medullary cavity

d) Rarely fractures

Correct Answer - C

- Ans:C.)No medullary cavity.
- **Peculiarities of Clavicle:**

1.It has no medullary cavity
2. It is the first bone to ossify in the fetus (5th-6th week)
3. It is the only long bone having 2 primary centers of ossification (others have only 1)
4. It is the only long bone that ossifies in membrane and not in cartilage
5. It is the only long bone lying horizontally
6. It is the most common fractured long bone in the body
7. It is subcutaneous throughout

## 4. Clavipectoral fascia is pierced by all except ?

a) Lateral pectoral nerve

b) Median pectoral nerve

c) Thoracoacromial vessels

d) Cephalic vein

Correct Answer - B
Ans. is 'b' i.e., Median pectoral nerve
**Clavipectoral fascia is pierced by -**

- Thoraco-Acromial vessels.
- Lateral pectoral nerve.
- Lymphatics passing from breast and pectoral region to apical-axillary l.n.
- Cephalic vein.

## 5. Root value of supinator jerk -

a) $C_3$ $C_4$

b) $C_4C_5$

c) $C_5$ $C_6$

d) $C_8$ $T_1$

Correct Answer - C
$C_5$ $C_6$

## 6. Small muscles of hand are supplied by:

a) C3

b) $C_4$

c) C6

d) C5-7 , C-8 to T1

Correct Answer - D

All small muscles of hand i.e. thener, hypothenar, interossei & lumbricals are supplied by *median and ulnar nerves which originate from C5-7 and C8 and T1 nerves.*

## 7. Bicipital aponeurosis lies over which structure in cubital fossa?

a) Ulnar nerve

b) Radial nerve

c) Brachial artery

d) Anterior interosseous artery

Correct Answer - C

- Bicipital aponeurosis  passes superficial to the *brachial artery and median nerve.* It lies deep to superficial veins.
- During venipuncture, the bicipital aponeurosis provides limited protection for brachial artery and median nerve.

## 8. Structure over bicipital aponeurosis in cubital fossa?

a) Ulnar nerve

b) Radial nerve

c) Brachial artery

d) Veins

Correct Answer - D
Veins

## 9. Nerve running along with profunda brachii artery, in spiral groove ?

a) Ulnar

b) Median

c) Radial

d) None

Correct Answer - C

Ans. is 'c' i.e., Radial

- Profunda brachii is a branch of brachial artery.
- It accompanies radial nerve in spiral groove.

**Branches of profunda brachii artery are :?**

1. Deltoid branch (ascending branch) :- It anastomoses with the descending branch of posterior circumflex humeral artery.
2. Nutrient artery to humerus:
3. Muscular branches
4. Posterior descending (middle collateral) :- It anastomoses with interosseous recurrent branch of ulnar artery.
5. Anterior descending (radial collateral) :It anastomoses with radial recurrent branch of radial artery in front of lateral epicondyle.

## 10. Boundaries of quadrilateral space include all except?

a) Teres major

b) Long head of triceps

c) Neck of humerus

d) Deltoid

Correct Answer - D
Deltoid

## 11. Axillary artery is divided into three parts by?

a) 1st rib

b) Clavicle

c) Pectoralis minor muscle

d) Teres minor muscle

Correct Answer - C

**Axillary artery**

- It is the main artery of upper limb. *It begins at the level of outer border of first rib as a continuation of subclavian artery.* It ends at the level of lower border of teres major to continue as brachial artery.
- The axillary artery is covered anteriorly by pectoralis minor, which divides it into three parts:?

1) First part :- This part is proximal to upper border of pectoralis minor, i.e. extends from outer border of first rib to upper border of pectoralis minor. The branch of first part is *Superior thoracic artery.*

2) Second part :- This part is behind pectoral is minor. It gives following branches.

*A) Thoracoacromial artery :-* It pierces clavipectoral foscia and gives following branches :-

(i) *Acromial*

(ii) *Pectoral,*

(iii) *Clavicular and deltoid.*

*B) Lateral thoracic artery*

3) Third part :- This part is distal to lower border of pectoralis minor, i.e. extends from pectoralis minor (lower border) to teres major (lower border). It gives following branches ?

*A) Subscapular artery:-* It gives off *circumflex scapular artery* and

then continues us *thoracodorsal artery.*

*B)* Anterior *circumflex humeral artery.*

*C)* *Posterior circumflex humeral artery.*

- Anterior and posterior circumflex arteries (both are branches of 3rd part of axillary artery) forms anastomosis around surgical neck of humerus.

## 12. Posterior wall of axilla is formed by

a) Pectoralis major

b) Pectoralis major

c) Subscapularis

d) Intercostal muscles

Correct Answer - C

**Axilla (armpit)**

- The axilla is *apyramidal space* situated between the upper part of the arm and the chest wall. It resembles afour *sided pyramid,* and has following : (i) an apex (ii) a base (iii) four walls (anterior, posterior, medial and lateral).

.. Anterior (pectoral) wall :- Formed by (i) *Pectoralis major,* (ii) *Pectoralis minor,* and (iii) *Subclavius.* The latter two muscles enclosed by clavipectoral fascia.

2. Posterior (subscapular) wall :- Formed by (i) Subcapularis, (ii) Teres major, and (iii) Latissimus dorsi.

3. Medial (thoracic) wall :- Formed by (i) Upper four ribs (with their intercostal muscles), and (ii) Upper part of serratus anterior.

4. Lateral (humeral) wall :- Formed by (i) Upper part of humerus with bicipital groove lodging the tendon of long head of biceps, and (ii) Corachobrachialis and short head of biceps ?

5. Base :- Formed by Skin, superficial fascia and deep (axillary) fascia. It is directed downwards.

Apex :- It is directed upwards and medially towards the root of neck. It communicates with supraclavicular triangle of neck, hence referred to as Cervicoaxillary canal. It is triangular in shape and is bounded anteriorly by clavicle, posteriorly by upper part of scapula and medially by outer border of first rib. The axillary artery and brachial plexus enter the axilla through this canal.

plaxus enter the axilla through this canal.

## 13. Anterior axillary fold is due to which muscle ?

a) Pectoralis major

b) Pectoralis minor

c) Subscapularis

d) Teres major

Correct Answer - A
Anterior axillary fold is rounded in shaped and is formed by pectoralis major (lower border). Posterior axillary fold is formed by teres major and latisimus dorsi.

## 14. Intracapsular but extrasynovial is ?

a) Long head of triceps

b) Long head of biceps

c) Short head of biceps

d) Medial head of biceps

Correct Answer - B
Origin of long head of biceps is intracapsular but extrasynovial, enclosed by a prolongation of synovial membrane of shoulder joint.

## 15. How many lactiferous ducts open in nipple ?

a) 0 -10

b) 15 -20

c) 25 -50

d) 50 -75

Correct Answer - B
The nipple is pierced by 15-20 lectiferous ducts.

## 16. Structure related to deltopectoral groove ?

a) Axillary artery

b) Cephalic vein

c) Baselic vein

d) Radial nerve

Correct Answer - B
Ans. is b' i.e., Cephalic vein
Deltopectoral groove is a groove between *deltoid muscle and pectoralis major muscle.*
It is traversed by cephalic vein

## 17. Common interosseous artery is a branch of -

a) Brachial artery

b) Radial artery

c) Ulnar artery

d) Profunda branchii artery

Correct Answer - C

**Branches of ulnar artery**

A) In cubital fossa

*1) Anterior ulnar recurrent :-* Anastomoses with inferior ulnar collateral in from of medial epicondyle.

*2) Posterior ulnar recurrent :-* Anastomoses with superior ulnar collateral behind medial cpicondyle.

*3) Common interosseous :-* Divides into

*i) Anterior interosseous :* It is the deepest artery of front of forearm. It is accompanied by *anterior interosseous nerve* (a branch of median nerve). It pierces interosseous membrane at upper border of pronator quadratus to enter into extensor (dorsal) compartment. Its branches are : (a) *muscular branches* for deep muscles of front of forearm; (b) *nutrient artery* to radius and ulna; and (c) *median artery.*

*ii) Posterior interosseous :* Near its origin, it gives of interosseous recurrent artery which ends by anastomosing with middle collateral artery.

B) In forearm

1) Palmar carpal branch

2) Dorsal carpal branch

C) In palm :- These are terminal branches.

*i) Deep branch :-* Completes the *deep palmar arch* on medial side

by joining the terminal part of radial artery.

*ii)* *Superficial branch :-* Forms the major part of superficial palmar arch.

## 18. True about blood supply of scaphoid?

a) Mainly through ulnar artery

b) Major supply from ventral surface

c) Major supply from dorsal surface

d) Proximal supply in antegrade fashion

Correct Answer - C
Major blood supply (70-80%) of scaphoid comes through dorsal surface via dorsal branches of radial artery.
These dorsal vessels enter the scaphoid at or just distal to waist area and supply the proximal pole in retrograde fashion.

**19. $3^{rd}$ and $4^{th}$ lumbrical (lateral two lumbricals) of foot are supplied by ?**

a) Medial plantar nerve

b) Lateral plantar nerve

c) Peroneal nerve

d) None of the above

Correct Answer - B
Behind the medial malleolus, beneath the flexor retinaculum the tibial nerve divides into its two terminal branches :
*i) Medial plantar nerve :-* It corresponds *approximately to the median nerve* in the hand as far as skin and muscle supplies are concerned. It supplies medial part of sole, plantar surface of medial $3^{rd}$ A digits, and innervates flexor digitorum brevis, abductor hallucis, flexor hallucis brevis and the first lumbrical.
*ii) Lateral plantar nerve :-* It correspods *approximately to the ulnar nerve.* It supplies the lateral part of sole, plantar surface of lateral digits and innervates flexor digitorum accesorius, abductor digiti minimi, flexor digiti minimi brevis, adductor hallucis, all intcrossei and $2^{nd}$,$3^{rd}$,$4^{th}$ lumbricals.

## 20. All are true about short saphenous vein except?

a) Runs behind lateral malleolus

b) Runs on lateral side of leg

c) Accompanied by sural nerve

d) Achillis tendon is medial to vein

Correct Answer - B
Short saphanous vein runs in the back (posteriorly) of leg (not laterally).
It enters the back of leg by passing *behind the lateral malleolus* and is *accompanied by sural nerve.*
In leg it ascends lateral to tendocalcaneous (tendoachillis). Thus tendoachillis is medial to vein.

## 21. Not true about inferior extensor retinaculum?

a) Y shaped

b) Superior slip attached to lower end of fibula

c) Inferior slip attached to deep fascia of sole

d) Lateral attached to calcaneum

Correct Answer - B

Ans. is 'b' i.e., Superior slip attached to the lower end of the fibula

**Inferior extensor retinaculum**

- It is a Y-shaped band lying in front of the ankle joint.

***Attachments:-***

- The stem of the inferior extensor retinaculum is attached to the upper surface of the calcaneus in front of sulcus calcanei. Passing medially, the stem divides into two bands. The upper band passes upwards and medially to be attached to tibial malleolus. The lower band extends downwards and medially to blend with plantar aponeurosis.

**Structures passing deep to it are :**

1) Tibialis anterior tendon.
2) Extensor hallucis longus tendon.
3) Dorsalis pedis vessels.
4) The deep peroneal nerve.
5) Extensor digitorum longus tendons.
6) Peroneus Tertius tendon.

## 22. True about popliteus are all except?

a) Flexor of knee

b) Intracapsular origin

c) Supplied by tibial nerve

d) Causes locking of knee

Correct Answer - D

**Popliteus**

Popliteus is a deep muscle of posterior compartment of leg.

Features of popletius are -

**Origin**

- Lateral surface of lateral condyle of femur, origin is intracapsular.
- Outer margin of lateral meniscus of knee.

**Insertion**

- *Posterior surface of shaft of tibia above soleal line.*

**Nerve supply**

- Tibial nerve

**Action**

- *Ulocks knee joint* by lateral rotation of femur on tibia prior flexion.
- Accessory flexor of knee.

## 23. True regarding semitendinosus ?

a) Supplied by common peroneal part of sciatic nerve

b) Proximal flashy distal thin

c) Distal flashy proximal thin

d) Proximal and distal thin middle fleshy

Correct Answer - D
Semitendinosus is a fusiform (spinadle shaped) muscles with main mass in middle of it. It arises in thin tendon from ischial tuberosity and ends in a long tendon to insert on medial surface of proximal part of tibia. o It is supplied by tibial part of sciatic nerve.

## 24. Which of the following dorsiflexes the foot -

a) Tibialis posterior

b) Tibialis anterior

c) Peroneus brevis

d) Extensor digitorum brevis

Correct Answer - B
Tibialis anterior

## 25. Artery piercing the oblique popliteal ligament of knee -

a) Superior genicular

b) Inferior genicular

c) Middle genicular

d) Popliteal

Correct Answer - C
Middle genicular

- Oblique popliteal ligament is an expansion from the tendon of semimembranosus attachment to intercondylar line of femur.
- It is closely related to popliteal artery and is pierced by middle genicular vessels and nerve and the terminal part of the posterior division of the obturator nerve.

## 26. Lateral dislocation of patella is prevented by ?

a) Rectus femoris

b) Vastus intermedius

c) Vastus lateralis

d) Vastus medialis

Correct Answer - D
Vastus medialis

## 27. Hunter's canal is seen in?

a) Cubital fossa

b) Popliteal fossa

c) Thigh

d) Calf

Correct Answer - C
Ans. is 'c' i.e., Thigh

## 28. True about iliotibial tract all except?

a) Receives insertion of gluteus maximus

b) Derived from fascia lata

c) Inserted on lateral tibial condyle

d) None

Correct Answer - D

**<u>Iliotibial Tract</u>**

The fascia lata is thickened laterally where it forms a *5* cm wide band called the iliotibial tract.

Superiorly the tract splits into two laters.

The superficial lamina is attached to tubercle of iliac crest, and deep lamina to the capsule of hip joint.

Inferiorly, the tract is attached to a smooth area on anterior surface of the lateral condyle of tibia.

The importance of the iliotibial tract is as follows.

*a)* Two important muscles are inserted into its upper part, between the superficial and deep laminae. These are the three-fourths part of the *gluteus maximus;* and the *tensor fasciae latae.*

b) The iliotibial tract stabilizes the knee both in extension and in partial flexion; and is, therefore, used constantly during walking and running.

## 29. Ligament supporting the talus is ?

a) Spring ligament

b) Deltoid ligament

c) LCL

d) Cervical ligament

Correct Answer - A
Ans. A) Spring ligament

- **Spring ligament (Plantar calcaneonavicular ligament)** connects the calcaneum with the navicular bone.
- However, its principal job is to provide a sling for the talus, to **support the head of talus** (though it has no attachment to talus).
- This aids in supporting the weight of the body.
- Weaknes or lengthening along this ligament can cause flat foot

## 30. False about tibia-fibula is ?

a) Nutrient artery of tibia is from posterior tibial artery

b) Nutrient artery of fibula is from peroneal artery

c) Proximal end of tibia is related to common peroneal nerve

d) Tibia is the most common site of osteomyelitis

Correct Answer - C

- Common peroneal nerve is related to neck of fibula (not tibia).
- Nutrient artery of tibia is a branch of posterior tibial artery.
- Nutrient artery of fibula is a branch of peroneal artery.
- Tibia is the commonest site of osteomyelitis.

## 31. All are branches of lumbar plexus except?

a) Iliohypogastric nerve

b) Ilioinguinal nerve

c) Obturator nerve

d) Subcostal nerve

Correct Answer - D
Ans. is 'd' i.e., Subcostal nerve

## 32. Articular surface of the sarum extends upto how many vertebrae in males ?

a) 1 to $1^{1/2}$

b) 2 to $2^{1/2}$

c) 3 to $3^{1/2}$

d) 4 to $4^{1/2}$

Correct Answer - C

*Articular surface of sacrum: the rough articular surface on the lateral aspects of the sacrum that articulates with the ilium on each side.*

## 33. Lower limit of sacro iliac joint lies upto which level in females ?

a) 1 to 1 $^{1/2}$

b) 2 to 2 $^{1/2}$

c) 3 to 3 $^{1/2}$

d) 4 to 4 $^{1/2}$

Correct Answer - B
, 2 to 2 $^{1/2}$

## 34. First rib is not related to ?

a) Sympathetic chain

b) Scalenus anterior

c) Suprapleural membrane

d) $T_2$ Nerve

Correct Answer - D
Ans. is `d' i.e., $T_2$ Nerve
**Anteriorly, the neck of the first rib is related to (from medial to lateral) :- (1) Sympathetic chain, (ii) I$^{st}$ posterior intercostal vein, (iii) Supeior intercostal artery, and (iv) 1$^{st}$ thoracic nerve. These structures are between neck of first rib (posteriorly) and apex of lung (anteriorly).**
Following are attached to first rib :- Scalenus anterior, scalenus medius, subclavius, serratus anterior ( I$^{st}$ digitation), costo-clavicular ligament and suprapleural membrane.

## 35. True about anterior intercostal artery ?

a) Present in 1st to 11th intercostal space

b) Each intercostal space has two anterior intercostal arteries

c) Branch of internal thoracic artery

d) Branch of aorta

Correct Answer - C

Ans. is 'c' i.e., Branch of internal thoracic artery

- Each of upper nine intercostal spaces (1 to 9) have one posterior and two anterior intercostal arteries. The 10"and 11" spaces have one posterior intercostal artery (no anterior intercostal artery)
- Posterior intercostal artery is the main artery of intercostal space and runs in the costal groove along the upper border of an intercostal space, lying between posterior intercostal vein and intercostal nerve (relationship from above downward VAN). 1" and 2' posterior intercostal arteries are branches of superior intercostal artery (a branch of costocervical trunk from 2"d part of subclavian artery* 05)).Lower nine (3rd to 11`") posterior intercostal arteries are branches of descending thoracic aorta. Right posterior intercostal arteries are longer than the left.
- Anterior intercostal arteries for upper six spaces (two in each space) arise from internal thoracic or internal mammary artery. For 7th to 9th spaces, these are branches of musculophrenic artery (terminal branch of internal thoracic artery).

## 36. True about right principal bronchus ?

a) Narrower

b) Horizontal

c) Shorter

d) All are true

Correct Answer - C
**Features of right bronchus (in comparison to left bronchus)**
*1) Shorter*
2) Wider
3) Vertical (in the line of trachea).

## 37. Thoracic duct is formed by?

a) Union of left subclavian and left internal jugular vein.

b) Union of brachiocephalic vein and internal jugular vein

c) Continuation of upper end of cisterna chyli

d) None of the above

Correct Answer - C

Thoracic duct is also called as Pecquet duct.

- It is the *largest lymphatic duct* in body, about 45 cm (18 inches) long.
- It has a *beaded appearance* because of the presence of many valves in its lumen.
- Thoracic duct begins as a continuation of the upper end of the cisterna chyli near the lower border of $\mathbf{T_{12}}$ vertebra and enters the thorax through the aortic opening of diaphragm (at **T12 ).**
- It then ascends through the posterior mediastinum and at $\mathbf{T_5}$ level crosses from right side to the left side and ascends along left margin of oesophagus to enter the neck.
- At the level of **C7** vertebrae, arches towards left side to open into left brachiocephalic vein at the angle of union of left subclavian and left internal jugular veins.

## 38. Thoracic duct opens into ?

a) Subclavian vein

b) Internal jugular vein

c) Right brachiocephalic vein

d) Left brachiocephalic vein

Correct Answer - D
Left brachiocephalic vein

## 39. Posterior relation of hilum of lung ?

a) Azygous vein

b) SVC

c) Vagus nerve

d) Arch of aorta

Correct Answer - C
Vagus nerve

## 40. Not related to hilum of right lung?

a) Azygous vein

b) Vagus nerve

c) SVC

d) Arch of aorta

Correct Answer - D
Arch of aorta is related to left lung.

## 41. Xiphoid fuses with sternum by what age ?

a) 30 years

b) 35 years

c) 40 years

d) 45 years

Correct Answer - C

**Ans. is 'c' i.e., 40 years** *[Ref Parikh 6th le p. 2.30, 2.31]*

Sternum

- Pieces of body unite between 14-25 years.
- Xiphoid unites with body at 40 years.
- Manubrium unites with body at 60 years.

Other bones

- *Hyoid :* greater cornu unites with body at 40-60 years.
- Laryngeal and costal cartilages ossify after 40 years.
- *Vertebra :* Osteophytes outgrowth, lipping of vertebra and disc atrophy occur.
-

## 42. Bronchopulmonary segments in right and left lungs respectively ?

a) 9, 11

b) 11,9

c) 10,10

d) 8, 10

Correct Answer - C

- Each lung has 10 bronchopulmonary segments.

## 43. At the level of Arch of aorta, the relationship of left vagus nerve and left phrenic nerve?

a) Phrenic nerve anterior, vagus nerve posterior

b) Phrenic nerve posterior, vagus nerve anterior

c) Both in same plane anteroposteriorly

d) Variable in relationship

Correct Answer - A
Phrenic nerve anterior, vagus nerve posterior

## 44. Posterior to transverse pericardial sinus?

a) Aorta

b) Pulmonary trunk

c) SVC

d) Left atrium

Correct Answer - C
Ans. is 'c' i.e., SVC

- Transverse sinus is a short passage that lies between the reflection of serous pericardium (epicardium) around arterial (aorta and pulmonary trunk) and venous ends of the heart tube.
- Transverse sinus is bounded anteriorly by ascending aorta and pulmonary trunk, *posteriorly by SVC, and inferiorly by left atrium.*

## 45. True about cremasteric reflex?

a) Afferent: genital branch of genitofemoral nerve

b) Efferent: genital branch of genitofermoral nerve

c) Efferent: femoral branch of genitofemoral nerve

d) Afferent: pudendal nerve

Correct Answer - B
Ans. is 'b' i.e., Efferent : genital branch of genitofemoral nerve

## 46. Urethral crest is an elevation seen in urethra due to:

a) Prostatic glands

b) Insertion of detrusor muscle

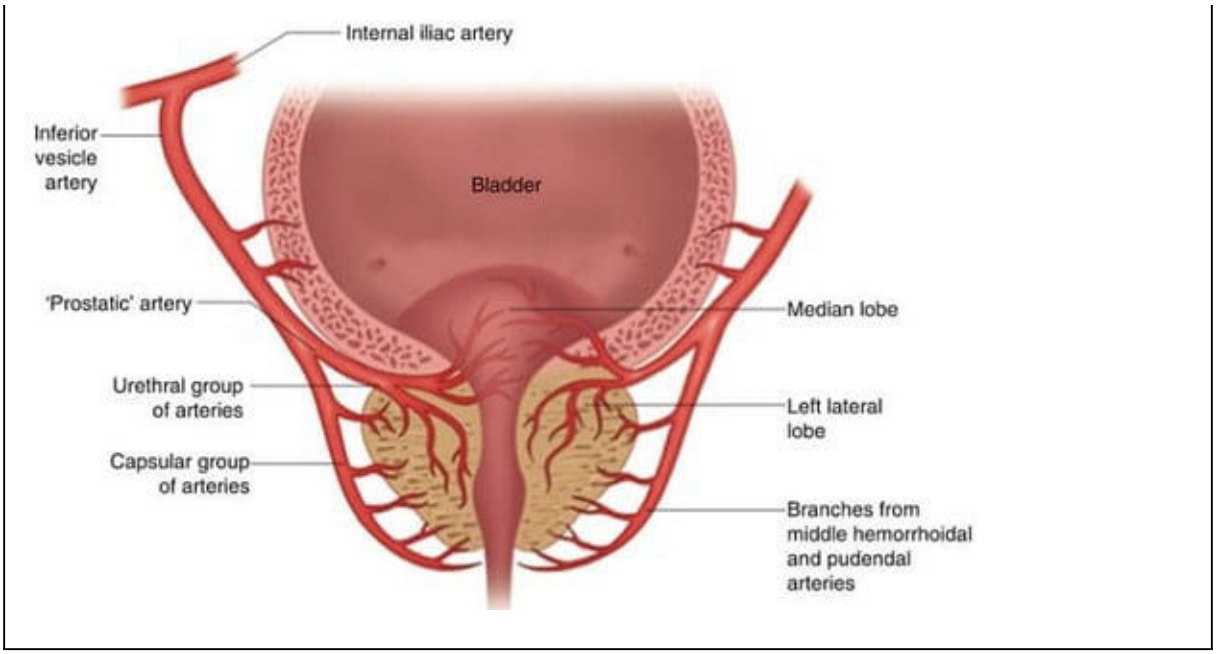
c) Insertion of trigone

d) Preprostatic internal sphincter

Correct Answer - A

**Answer**- A (Prostatic glands)

- The urethral crest is an anatomical feature present in the urinary system of both males and females.
- The prostatic portion (pars prostatica), the widest and most dilatable part of the canal, is about 3 cm long.
- Upon the posterior wall or floor is a narrow longitudinal ridge, the urethral crest, formed by an elevation of the mucous membrane and its subjacent tissue.
- On either side of the crest is a slightly depressed fossa, the prostatic sinus, the floor of which is perforated by numerous apertures, the orifices of the prostatic ducts from the lateral lobes of the prostate; the ducts of the middle lobe open behind the crest.


Internal iliac artery
Inferior vesicle artery
Bladder
'Prostatic' artery
Median lobe
Urethral group of arteries
Left lateral lobe
Capsular group of arteries
Branches from middle hemorrhoidal and pudendal arteries

## 47. Pyramidalis is supplied by ?

a) Subcostal nerve

b) Ilioinguinal nerve

c) Iliohypogastric nerve

d) Genitofemoral nerve

Correct Answer - A
Ans. is 'a' i.e., Subcostal nerve

## 48. Appendices epiploicae is a feature of ?

a) Duodenum

b) Stomach

c) Colon

d) Jejunum

Correct Answer - C
**Characteristic features of large intestine**
i) 3 longitudinal bands, formed by longitudinal muscle coat, called Taeniae coli.
ii) Sacculation or haustration
iii) Fat filled peritoneal pouches called appendices epiploicae. These are not found in appendix, caecum, and rectum.
iv) Greater part is fixed except for appendix, transverse colon and sigmoid colon.
v) Pyere's patches (present in small intestine) are not present.

**49.**

## Appendices epiploicae is seen in all part of large intestine except -

a) Sigmoid colon

b) Ascending colon

c) Caecum

d) Transverse colon

Correct Answer - C
Ans. is 'c' i.e., Caecum
Small bags of peritoneum filled with fat, called *appendices epiploicae* are present over the surface of large intestine, *except for appendix, caecum and rectum.*

## 50. Inferior rectal artery is a branch of?

a) Inferior mesenteric artery

b) Superior mesenteric artery

c) Coeliac trunk

d) Internal pudendal artery

Correct Answer - D
Ans. is 'd' i.e., Internal pudendal artery

## 51. Cremasteric artery is a branch of?

a) Internal pudendal artery

b) External pudendal artery

c) Inferior epigastric artery

d) Superior epigastric artery

Correct Answer - C
Inferior epigastric artery

## 52. Superficial epigastric artery is a branch of?

a) Internal pudendal artery

b) External pudendal artery

c) Internal iliac artery

d) Femoral artery

Correct Answer - D
Ans. is **'d' i.e.,** Femoral artery
**Branches of femoral artery**
*1) Superficial :- Superficial external pudendal, superficial epigastric,* superficial circumflex iliac.
*2) Deep branches :-* Profunda femoris, *deep external pudendal,* muscular branches, descending genicular branch (last branch in the adductor canal).

- Note: Superior epigastric artery is a branch of internal thoracic artery.

## 53. Inferior epigastric vein drains into?

a) Femoral vein

b) External iliac vein

c) Internal iliac vein

d) Internal pudendal vein

Correct Answer - B
Ans. is 'b' i.e., External iliac vein

- Inferior epigastric vein drains into External iliac vein.
- Superior epigastic vein drains into Internal thoracic vein.

## 54. Superior rectal vein drains into?

a) Inferior mesenteric vein

b) External iliac vein

c) Internal iliac vein

d) Internal pudendal vein

Correct Answer - A
Ans. is 'a' i.e., Inferior mesenteric vein

- Superior rectal vein drains into inferior mesenteric vein.
- Inferior rectal vein drains into internal pudendal vein.

## 55. Most common location of accessory spleen?

a) Hilum of spleen

b) Greater omentum

c) Lesser omentum

d) None

Correct Answer - A
**Accessory spleen may be found at :-**
i) Hilum of spleen (most common site).
ii) Tail of pancrease.
*iii) Derivatives of dorsal mesogastrium :-* Greater omentum, gastrophrenic ligament, gastrosplenic ligament, linorenal ligament.
iv) Broad ligament of uterus (in males) and spermatic cord (in female); both left side.

## 56. Length of Posterior vaginal wall is

a) Variable

b) Same as anterior vaginal wall

c) Less than anterior vaginal wall

d) More than anterior vaginal wall

Correct Answer - D
Ans. is 'd' i.e., More than anterior vaginal wall
**Vagina**
The vagina is a fibromuscular, canal forming the female copulatory organ.
It extends from vulva to uterus.
Mucous membrane is lined by nonkeratinized stratified squamous epithelium.
The anterior wall is about 8 cm long and the posterior wall is about 10 cm long.
The lumen is circular at the upper end because of the protrusion of the cervix into it.
Below the cervix, anterior and posterior walls are in contact.
The interior of the upper end of the vagina (or vaginal vault) is in the form of a circular groove that surrounds the protrudng cervix.
The groove becomes progressively deeper form before backwards and is arbitrarily divided into four parts called the vaginal fornices :
Anterior fornix lies in front of the cervix and is *shallowest.*
Posterior fornix lies behind the cervix and is deepest.
Two lateral fornices lie one on each side of the cervix. Lateral fornix is related to the *transverse cervical ligament* of pelvic fascia in which are embedded a network of *vaginal vein* and *the ureter gets crossed by the uterine artery.*

**Relations of vagina**

- Anterior wall
- Upper half is related to the base of the bladder.
- Lower half to the urethra.

**Posterior wall**

- Upper one-fourth is separated from the rectum by the rectouterine pouch.
- Middle two-fourths are separated from the rectum by loose connective tissue.
- Lower one-fourths is separated from the anal canal by the perineal body and the muscles attached to it.

Lateral walls

**One each side :**

- Upper one-third is related to the transverse cervical ligament of pelvic fascia in which are embedded a network of vaginal veins, and the ureter gets crossed by the uterine artery.
- Middle one-third is related the pubococcygeus part of the levator ani.
- Lower one-third pierces the perineal membrane, below which it is related to the bulb of the vestibule, the bulbospongiosus and the duct of greater vestibular gland of bartholin.

**Arterial supply**

- Vaginal branch of internal iliac (main supply)
- Cervicovaginal branch of uterine artery (in upper part).
- Middle rectal and internal pudendal arteries (in lower part).

## 57. Bare area of liver is related to -

a) Aorta

b) Hepatic vein

c) Portal vein

d) Gall bladder

Correct Answer - B

**Hepatic vein**

- Between two layers of coronary ligaments, there is a large triangular area in diaphragmatic surface of liver which is not covered by peritoneum.
- It is called *'bare area of liver'.*
- It is related to inferior vena cava (IVC).
- The hepatic veins (usually three) leave the liver in bare area.
- This area is clinically important as it is a site where infection can spread from abdominal cavity to thoracic cavity.

## 58. True about circumcaval ureter ?

a) Developmental anomaly of ureter

b) Ureter passes in front of IVC from lateral to medial

c) Mostly involves right ureter

d) Type 2 is more common

Correct Answer - C

- Circumcaval (retrocaval) ureter results from altered vasculature rather than ureteral development. Thus, preureteral vena-cava is more appropriate term.
- This disorder involves right ureter which passes behind IVC winding about and crosses in front of it from medial to lateral direction.

**The anomaly is divided into two types *:?***

*1)* *Type 1 :* It is more common and has hydronephrosis with a typically obstructing pattern demonstrating some degree of fish-hook shaped deformity of ureter.

*2)* *Type 2 :* It has lesser degree of hydronephrosis or not at all.

**59. Which of the following is a retroperitoneal structure?**

a) Ileum

b) Jejunum

c) Ureter

d) Appendix

Correct Answer - C
Ureter

## 60. Falciparum ligament contains?

a) Ligamentum venosus

b) Ligamentum teres

c) Linorenal ligament

d) None of the above

Correct Answer - B

**Peritoneal ligaments**

1. Gastrosplenic ligament :- **It** extends from hilum of spleen to greater curvature of stomach. It *contains short gastric and left gastroepiploic vessels.*
2. Linorenal ligament :- It extends from hilum of spleen to anterior surface of left kidney. It *contains splenic vessels and tail of pancreas.* It develops from *dorsal mesogastrium.*
3. Gastrophrenic ligament :- It connects the greater curvature of stomach to diaphragm. It develops from *dorsal mesogastrium.*
4. Phrenicocolic ligament :- It connects left colic (splenic) flexure to diaphragm. It supports the anterior border of spleen.
5. Falciform ligament :- It demarcates the right and left lobes of liver. It contains *ligamentum teres (remnant of left umblical vein)* and *paraumblical vein.* It develops of *ventral mesogastrium (ventral part).*
6. Coronary ligaments :- It contains superior and inferior layers which connect liver to diaphragm, and encloses the triangular *'bare area of liver'.*
7. Triangular ligaments (a right and a left) :- These connect right and left lobes of liver to diaphragm. It develops from *ventral mesogastrium.*

**61.**

# Part of colon with no mesentery?

a) Transverse colon

b) Sigmoid colon

c) Ascending colon

d) Rectum

Correct Answer - C

**Mesenteries in intestine**

1) Mesentery proper :- Mesentery of small intestine (jejunum and ileum) is fan shaped double layered peritoneal fold which suspends the coils of jejunum and ileum. Mesentery has :?

***i)*** **Attached border (root of mesentery) :**- It is 15 cm long and extends from duodenojejunal flexure (on left side of $L_2$) to upper part of right sacroiliac joint.

**Root of mesentery crosses following structures :-**

(i) *3rd part (horizontal part) of duodenum,*
(ii) *abdominal aorta,*
(iii) *IVC,*
(iv) *right ureter,* and
(v) *right psoas major.*

**ii) Free border (intestinal border) :**- It is *6 meters* long and is attached to gut forming its visceral peritoneum (serous coat).

2) Transverse mesocolon :- It connects transverse colon to posterior abdominal wall and *contains middle colic vessels.*

3) Mesoappendix :- It connects the appendix to the ileal mesentery and *contains appendicular vessels.*

4) Sigmoid mesocolon :- It connects sigmoid colon to posterior pelvic wall and *contains sigmoid vessels.*

5) Mesorectum : It contains superior rectal vessels (artery & veins)

with their branches, lymphatic vessels and lymph nodes along superior rectal artery, and branches from inferior mesenteric plexus.

## 62. False regarding trigone of bladder ?

a) Lined by transitional epithelium

b) Mucosa smooth and firmly adherent.

c) Internal urethral orifice lies at lateral angle of base

d) Developed from mesonephric duct

Correct Answer - C

**Trigone of bladder has following features :**

1) Lined by transitional epithelium
2) Mucosa is smooth and firmly adherent
3) Ureters open at lateral angles of base and internal urethral orifice lies at apex.
4) Has Trigonal muscle of bell (smooth muscle layer just beneath mucosa).
5) Derived from absorbed part of mesonephric duct (Wolffian duct).

## 63. Trigone of urinary bladder develops from:

a) Mesoderm

b) Ectoderm

c) Endoderm of urachus

d) None of the above

Correct Answer - A

- With differential growth of the dorsal bladder wall, the ureters come to open through the lateral angles of the bladder, and the mesonephric ducts open close together in what will be the urethra.
- That part of the dorsal bladder wall marked off by the openings of these four ducts forms the trigone of the bladder.
- Thus, lining of the bladder over the trigone is mesodermal in origin;
- The smooth muscle of the bladder wall is derived from the splanchnopleuric mesoderm.
- The apex of the bladder is continuous with the allantois, which now becomes obliterated and forms a fibrous core, the urachus.
- The urachus persists throughout life as a ligament that runs from the apex of the bladder to the umbilicus and is called the median umbilical ligament
  o Linining epithelium of bladder mucosa is transitional epithelium. When empty mucosa is thrown into rugae except in trigone, where mucosa is smooth and firmly adherent.
  o just beneath the mucosa of trigone there is layer of smooth muscle, Trtgonal muscle of Bell which replaces the submucous coat in trigone area

## 64. Watershed zone of large intestine ?

a) Cecum

b) Ascending colon

c) Rectosigmoid

d) Transverse colon

Correct Answer - C
There are areas of colon with poor blood supply resulting from incomplete anastomosis of marginal arteries. These are watershed areas of colon and include :
1. Splenic flexure (Griffith point) : Watershed area between superior mesenteric artery and inferior mesenteric artery.
2. Rectosigmoid junction (Sudeck's point) : Watershed zone between *inferior mesenteric artery and internal iliac artery.*

## 65. Ligament extending from cervix and vagina to lateral pelvic wall ?

a) Broad ligament

b) Pubocervical ligament

c) Round ligament

d) Transverse cervical ligament

Correct Answer - D

- Transverse cervical ligaments of Mackenrodt are fan-shaped condensation of endopelvic fascia on each side of cervix above the levator ani and around uterine vessels.
- They connect lateral aspect of cervix and upper vaginal wall to lateral pelvic wall.
- They form a *'hammock'* that supports the uterus.

## 66. True about Scarpa's fascia ?

a) Deep fascia of anterior abdominal wall

b) Also called Buck's fascia

c) Attached to Iliotibial tract

d) Forms suspensory ligament of penis

Correct Answer - D

**Fascia of anterior abdominal wall**

A) Superficial fascia

The superficial fascia of anterior abdominal wall (below the level of umblicus) is divided into : Superficial fatty layer *(fascia of camper or camper's fascia),* and deep membraneus layer *(fascia of scarpa or scarpa's fascia).*

The fatty layer (fascia of camper) is continuous with the superficial fascia of adjoining part of the body.

However, in the penis it is devoid of fat and in scrotum it is replaced by dartos muscle, i.e., in scrotum dartos muscle is present instead of fatty layer of superficial fascia.

B) Deep fascia

It is present in the form of a thin layer covering the muscles and their aponeuroses and large neurovascular structures. At superficial inguinal ring it continues over the spermatic cord as external spermatic fascia into scrotum and continue over the penis as deep fascia of penis (Buck's fascia).

## 67. Where is the Cave of Retzius present?

a) Between urinary bladder and rectum

b) Between urinary bladder and cervix

c) In front of the bladder

d) Between the cervix and the rectum

Correct Answer - C
Space of Retzius is a horse-shoe shaped potential space which *intervenes between the antero-lateral pelvic wall and the sides of the bladder and prostate.*

## 68. Nerve entering the inguinal canal through deep inguinal ring ?

a) Ilioinguinal nerve

b) Pudendal nerve

c) Genital branch of genitofemoral

d) Superior rectal nerve

Correct Answer - C
The spermatic cord in males and round ligament of uterus in females, enter the inguinal canal through the deep inguinal ring and pass out through superficial inguinal ring.
Thus consituents of spermatic cord are also components of inguinal canal; these are ductus deferens (vas deferens), testicular artery, cremestric artery, artery to ductus deference, pampiniform plexus, lymphatics, sympathetic plexus, *genital branch of genitofemoral nerve,* remains of process vaginalis.
Note: Ili oiguinal nerve enters inguinal canal through interval between external and internal oblique muscles (not through deep inguinal ring).

## 69. Initially, renal arteries are branches of ?

a) Internal pudendal artery

b) External iliac artery

c) Common iliac artery

d) Aorta

Correct Answer - C

**Due to ascent of kidneys during development, the blood supply of kidney changes:?**

1) Initially when the kidneys are in pelvis, the renal arteries are branches of common iliac arteries.

2) With progressive ascent, the arteries to kidneys are derived from different levels of aorta.

## 70. In a neonate, kidney is supplied by?

a) Internal pudendal artery

b) External iliac artery

c) Common iliac artery

d) Aorta

Correct Answer - D

- Upto 5$^{th}$ week of intrauterine life, kidney is in lumbar region and renal arteries are branches of common iliac artery (see above explanation).
- After that, differential growth of abdominal wall causes the kidney to ascent to lumbar region. Adult position (lumbar region of abdomen) is attained by 9$^{th}$ week. Druing progressive ascent, the arteries to kidney are derived from different levels of aorta.
- After full ascent, definitive renal artery is branch of aorta at 2$^{nd}$ lumbar segment.
- *Thus, neonatal kidney is supplied by aorta.*

## 71. External oblique forms all except?

a) Lacunar ligament

b) Pectineal ligament

c) Conjoint tendon

d) Inguinal ligament

Correct Answer - C

- Inguinal ligament (Poupart's ligament) is the folded lower border of external oblique aponeurosis
- Lacunar ligament (Gimbernats ligament) is the crescent shaped expansion from the medial end of inguinal ligament attached to pectineal line of pubis.
- Pectineal ligament (Cooper's ligament) is strong fibrous band extending laterally from the lacunar ligament along pectineal line of pubis. Similar to lacunar ligament, it is made of external oblique aponeurosis.
- Reflected part of inguinal ligament extends from the lateral crus of superficial inguinal ring formed by inguinal ligament upwards to linea alba. It forms the posterior wall of inguinal canal.
- Conjoint tendon (falx inguinalis) is formed by the aponeuroses of internal oblique and transversus abdominis muscle and is attached to pubic crest.

## 72. Meckel's cave is related to ?

a) Submandibular ganglion

b) Trigeminal ganglion

c) Otic ganglion

d) Pterygopalatine ganglion

Correct Answer - B
Ans. is 'b' i.e., Trigeminal ganglion
Trigeminal ganglion (Gasserion ganglion or semilunar ganglion) lies in a dural pouch, the cavum trigeminale (Meckel's cave).

## 73. Longest spinous process is seen in ?

a) $C_2$

b) $C_4$

c) $C_5$

d) $C_7$

Correct Answer - D
Ans. is 'd' i.e., $C_7$

**Cervical Vertebrae**

- There are 7 cervical vertebrae of which *3-6 are typical and 1st, 2nd and 7th are atypical.* Characteristic features of typical cervical vertebra are : -

i. Foramen transversarium is present in the transverse process. Foramina transversaria of Cl to C6 vertebrae transmit vertebral artery, vertebral vein and sympathetic plexus, and that of C7 transmits only vertebral veins.
i. Body is small and broad transversely (side to side).
i. Spinous process is small and bifid.
/. Vertebral foramen is large and triangular.
/. Superior articular facet is directed backwards and upwards, and inferior facet is directed downwards and forwards. *Articular process are placed horizontally, So that dislocation can occur without fracture.*
i. The anterior tubercle on transverse process of C6 vertebra is prominent and is called carotid tubercle or chaissagnac's tubercle. It is related to common carotid artery which can be palpated against it. Erb's point is opposite chassaignac's tubercle. Cricoid cartilage is at same level ($C_6$ vertebra).

- Important features of atypical vertebrae are : ?

1. First cervical vertebra (atlas) is ring like bone having lateral mass on each side connected by a smaller anterior arch and a larger posterior arch. Anterior arch has a facet for dens of axis. Each lateral mass has an upper articular facet for occipital condyle and lower facet for body of C2 (axis) vertebra. Cl vertebra does not have body and spinous process.
2. Second cervical vertebra (axis) is characterized by presence of *odontoid process or dens,* a peg-like projection from the body.
3. Seventh cervical vertebra is called as vertebra prominens because it has most promenent spinous process which is not bifid. Foramen transversarium transmits only vertebral vein, not vertebral artery.

## 74. Sweat gland near the lid margins

a) Moll

b) Zeis

c) Meibomian

d) Krause

Correct Answer - A
Ans. is 'a' i.e., Moll

- Glands of Moll (Moll's gland) are apocrine sweat glands just next to the eyelashes.
- Zeis glands are sebaceous glands near lid margins.
- Meibomian gland (tarsal glands) are specialized sebaceous gland at the rim of eyelids inside the tarsal plate.
- Krause's glands are accessory lacrimal glands underneath the eyelid.

## 75. Anterior lymphatics from the nose drain into ?

a) Pretracheal nodes

b) Submandibular nodes

c) Sublingual nodes

d) Superficial cervical nodes

Correct Answer - B
Ans. is 'b' i.e., Submandibular nodes
**Submandibular nodes**

- These nodes lie deep to investing layer of deep cervical fascia in submandibular triangle, between the deep fascia and submandibular gland.
- These nodes receive afferents from centre of forehead; anterior part of nasal cavity; frontal, maxillary and ethmoidal air sinuses; inner canthus (medial angle of eye); whole of upper lip and anterior part of cheek with underlying gum and teeth; outer part of lower lip with lower gums and teeth excluding incisors; anterior two third of tongue excluding the tip; floor of mouth; and angle of mouth.
- These nodes also receives efferents of submental nodes.
- Submandibular nodes drain into (efferent) upper and lower deep cervical nodes.

## 76. Killian's dehisence is seen in ?

a) Oropharynx

b) Nasopharynx

c) Cricopharynx

d) Vocal cords

Correct Answer - C
Ans. is 'c' i.e., Cricopharynx
***Inferior constrictor muscle*** **has two parts :-**
(i) *Thyropharyngeous* with oblique fibres, and (ii) *Cricopharyngeous* with transverse fibres.
Between these two parts of inferior constrictor exists a potential gap called Killan's dehiscence. It is also called the *gateway to tear* as *perforation* can occur at this site during esophagoscopy. It is also the site for herniation of pharyngeal mucosa in case of pharyngeal *pouch.*

## 77. Fossa incudis is related to ?

a) Head of malleus

b) Long process of incus

c) Short process of incus

d) Foot process of stapes

Correct Answer - C

- Fossa incudis contains short process of Incus.
- Head of malleus is attached to epitympanum by ligament of head of malleus.
- Long process of incus is attached to head of stapes.
- Footplate of stapes lies over oval window.

## 78. Unpaired laryngeal cartilage ?

a) Arytenoid

b) Corniculate

c) Cuneiform

d) Epiglottis

Correct Answer - D
The skeletal supports of larynx is provided by *Six cartilages,* 3 out of which are paired (so there are total 9 cartilages).
i) *Unpaired :-* Thyroid, cricoid, epiglottis.
*ii) Paired :-* Arytenoid, Corniculate, cuneiform.

## 79. Which is the only nerve which exits the brainstem on dorsal side ?

a) Facial

b) Trigeminal

c) Trochlear

d) Abducent

Correct Answer - C
**Unique features of trochlear nerve are *:?***
*i) Most selender cranial nerve.*
ii) Only cranial nerve to emerge on the dorsal aspect of brain.
iii) Only cranial nerve to undergo complete internal decussation before emerging i.e. right trochlear nerve arises from left trochlear nucleus and vice versa.
iv) Has'longest intracranial course (Vagus nerve has overall longest course).
*v) Thinnest cranial nerve* (smallest nerve in terms of the number of axons it contains).

## 80. Blood supply of putamen includes all except?

a) Medial striate arteries

b) Lateral striate arteries

c) Anterior choroidal artery

d) Posterior communicating artery

Correct Answer - D
**Blood supply of basal ganglia**
Caudate nucleus and putamen are supplied by *lateral and medial striate* branches of anterior, medial and posterior cerebral arteries. *Putamen receives additional supply from anterior choroidal artery.* o Globus pallidus is supplied by lateral striate and anterior choroidal arteries.

## 81. Medulla is supplied by all except?

a) Basilar artery

b) Anterior spinal artery

c) Vertebral artery

d) Posterior cerebral artery

Correct Answer - D
Posterior cerebral artery

## 82. Length of Eustachian tube?

a) 12 mm

b) 24mm

c) 36mm

d) 48mm

Correct Answer - C

- Length of Eustachian tube is 36 mm. (reached by the age of 7 years)
- *Lateral third (i.e. 12 mm) is bony.*
- *Medial 2/3 (i.e. 24 mm) is fibrocartilaginous.*

**83. Parasympathetic supply to lacrimal glands are passed through ?**

a) Lesser petorsal nerve

b) Chorda tympani

c) Greater petorsal nerve

d) Lingual nerve

Correct Answer - C
Greater petorsal nerve

## 84. Onodi cells are seen in?

a) Sphenoid sinus

b) Maxillary sinus

c) Anterior ethmoidal sinus

d) Posterior ethmoidal sinus

Correct Answer - D

**Ethmoidal sinuses are divided into two groups :**

A) Anterior group

i) *Anterior ethmoidal air cells*

- Anterior ethmoidal air cells drain into- *either the ethmoidal infundibulum or the frontonasal duct.* Some air cells may invade the *orbital floor.* These are known as the *Haller' cells.*

ii) *Middle ethmoidal air cells*

- Also known as bullar sinuses. The middle ethmoidal air cells drain- *into the middle meatus by one or more orifices on or above the ethmoidal bulla.*

B) Posterior group

- Posterior ethmoidal air cells usually drain- *into the superior meatus.* The posterior group lies very close to the optic canal and optic nerve. The *Onodi cell* is usually regarded as the most posterior ethmoid cell that pneumatizes lateral and superior to the sphenoid sinus and is intimately associated with the *optic nerve.*

## 85. Haller cells are seen in?

a) Roof of nose

b) Orbital floor

c) Lateral nasal wall

d) Maxillary sinus

Correct Answer - B
The Onodi and Haller cells are ethmoidal air cells.
Some air cells may invade the *orbital floor.* These are known as the *Haller' cells.*
The *Onodi cell* is usually regarded as the most posterior ethmoid cell that pneumatizes lateral and superior to the sphenoid sinus and is intimately associated with the *optic nerve.*

## 86. Which valve is present at opening of nasolacrimal duct?

a) Hasner's valve

b) Heister valve

c) Spiral valve

d) None

Correct Answer - A
Nasolacrimal duct opens into inferior meatus and is closed by a mucosal flap called Hasner's valve.
Heister valve (spiral valve) is present in cyctic duct.

## 87. Cribriform plate forms ?

a) Roof of olfactory region

b) Floor of olfactory region

c) Nasal septum

d) All of the above

Correct Answer - A

**Internal nose**

Internal nose has following parts

*i) Nasal cavity proper :-* Internal nose is divided into right and left nasal cavities by nasal septum. Each nasal cavity communicates with the exterior through *naris or nostrils* and with nasopharynx through *posterior nasal aperture or posterior ?tares or choana.*

*ii) Vestibule of nose :-* Anterior and inferior part of the nasal cavity is lined by skin and is called vestibule of nose. It contains sebaceous glands, hair follicles and the hair called *vibrissae.*

Each nasal cavity has a lateral wall, a medial wall (nasal septum), a roof, and a floor.

The olfactory mucosa lines upper 1/3 of nasal cavity including the roof formed by cribriform plate, and medial and lateral wall up to the level of superior concha.

## 88. Galen's anastomosis is between ?

a) Recurrent laryngeal nerve and external laryngeal nerve

b) Recurrent laryngeal nerve and internal laryngeal nerve

c) Internal laryngeal nerve and external laryngeal nerve

d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Recurrent laryngeal nerve and internal laryngeal nerve

**There are two types of important anastmosis between laryngeal branches of vagus :?**

1. Galen anastomosis (Ramus anastomoticus or Ansa of Galen)

- This is an anastomosis between the *recurrent laryngeal nerve and internal laryngeal nerve (internal branch of superior laryngeal nerve).*
- Generally, posterior branch of recurrent laryngeal nerve contributes to the anastomosis; however, anterior branch can also contribute.

2. Human communicating nerve

- It is an anastomosis between *recurrent laryngeal nerve (distal part) and external laryngeal nerve (external branch of superior laryngeal nerve).*

## 89. Lamina papyracea is between ?

a) Optic nerve and orbit

b) Maxillary sinus and orbit

c) Ethmoid sinus and orbit

d) Cranial cavity and orbit

Correct Answer - C
The thinnest portion of medial wall of orbit is the lamina papyracea which *separates ethmoid sinuses from orbit.* o Infection from ethmoidal sinus can easily breach this paper thin bone and affect the orbital contents.

## 90. False about sternocleidomastoid?

a) Arises from sternum and clavicle

b) Insertes on mastoid process

c) Motor supply by spinal accessory nerve

d) Tilt the head on opposite side

Correct Answer - D

**Sternocleidomastoid tsternomastoidl**

**Origin**

1. The, *sternal head*
2. The *clavicular head*

Insertion

**It is inserted :**

1. By a thick tendon into the lateral surface of *mastoid process,* from its tip to superior border.
2. By a thin apponeurosis into the lateral half of the *superior nuchal line* of the occipital bone. Nerve supply
3. The spinal accessory nerve provides the motor supply. It passes through the muscle.
4. Branches from the ventral rami of C2 are proprioceptive.

Blood supply

- Arterial supply-one branch each from superior thyroid artery and suprascapular artery and, two branches from the occipital artery supply the big muscle.
- Veins follow the arteries.

Actions

1. When one muscle contracts :

a) It turns the chin to the opposite side.

*b) It can also tilt the head towards the shoulder of same side.*

2. When both muscles contract together :

2. When both muscles contract together:

a) They draw the head forwards, as in eating and in lifting the head from a pillow.

b) With the longus colli, they flex the neck against resistance.

c) It also helps in forced inspiration.

**91.** **The key to the root of the neck is the scalenus anterior muscle. Which among the following is TRUE about scalenus anterior?**

a) Not Pierced by phrenic nerve

b) Attached to scalene tubercle on 2nd rib

c) Separates subclavian artery from subclavian vein

d) Pierced by phrenic nerve

Correct Answer - A

**Ans. (A) Not pierced by phrenic nerve**

- The subclavian vein forms an arch across the pleura at a level below the arch of subclavian artery. The two arches are separated from each other by scalenus anterior muscle.
- Scalenus anterior arises from the anterior tubercles of C3-C6 and attaches to the scalene tubercle and adjacent ridge on the inner border and upper surface of the first rib.
- Phrenic nerve passes vertically down across the obliquity of the muscle, plastered there to by the prevertebral fascia.
- Transcervical and suprascapular arteries lie between the scalenus anterior and the carotid sheath.

## 92. Tongue muscle which is not developed from occipital myotome ?

a) Styloglossus

b) Hyoglossus

c) Genioglossus

d) Palatoglossus

Correct Answer - D

**DEVELOPMENT OF THE TONGUE :?**

I. Epithelium

a) Ant 2/3 -- lingual swellings of 1st arch and tuberculum impar

*b) Post 1/3 -- large dorsal part of hypobranchial eminence, Le. 3rd arch*

c) Posterior most part -- small dorsal part of the hypobranchial eminence, i.e. 4th arch

II. Muscles

From occipital myotomes except palatoglossus which is derived from the 6th arch.

## 93. Korner's septum is seen in ?

a) Petrosquamous suture

b) Temporosquamous suture

c) Petromastoid suture

d) Frontozygomatic suture

Correct Answer - A
Mastoid develops from squamous and petrous bone.
Korner's septum is persistence of petrosquamous suture in the form of a bony plate.
Korner's septum is surgically important as it may cause difficulty in locating the antrum and the deeper (ells, and thus lead to incomplete removal of disease at mastoidectomy. Mastoid antrum cannot be reached unless the
Korners septum has been removed.

## 94. What is true about chorda tympani?

a) Postganglionic sympathetic

b) Preganglionic sympathetic

c) Preganglionic parasympathetic

d) Postgalglionic parasympathetic

Correct Answer - C
Chorda tympani arises from intratemporal part (in fallopion canal) of facial nerve.
* It carries preganglionic secretomotor fibers (not postganglionic) to submandibular and sublingual glands.
* It joins lingual nerve in infratemporal fossa.
* It carries taste sensations from anterior 2/3 of tongue.

## 95. Vidian nerve is formed by union of?

a) Superficial petrosal nerve and deep petrosal nerve

b) Greater petrosal nerve and superficial petrosal nerve

c) Greater petrosal nerve and deep petrosal nerve

d) Greater petrosal nerve and external petrosal nerve

Correct Answer - C
Greater petorsal nerve units with deep petrosal nerve to form nerve to pterygoid canal (also called vidian nerve).

## 96. Woodruff's area is located at ?

a) Antero-inferior part of nasal septum

b) Posteroinferior part of nasal septum

c) Superior part of nasal septum

d) Posteroinferior part of lateral nasal wall

Correct Answer - D

- Posteriorly on the lateral nasal wall is the area known as Woodruff's area. It is situated under the posterior end of inferior turbinate.
- Sphenopalatine artery anastomoses with posterior pharyngeal artery, in this area.

## 97. Scutum is present in middle ear ?

a) Roof

b) Lateral wall

c) Medial wall

d) Floor

Correct Answer - B
Lateral wall

**98.**

## Not a part of bony labyrinth?

a) Cochlea

b) Vestibule

c) Utricle

d) Semicircular canal

Correct Answer - C
The inner ear within the petrous part of temporal bone consists of a membranous labyrinth enclosed in a bony (osseous) labyrinth. So, inner ear has two parts : ?

- Bony labyrinth :- Cochlea, Vestibule, Semicircular canals.
- Membranous labyrinth :- Cochlear duct, utricle, Saccules, three semicircular ducts, and endolymphatic duct & sac.

## 99. Lymphatic drainage of thyroid gland is mainly ?

a) Sublingual nodes

b) Submandibular nodes

c) Deep cervical nodes

d) Submental nodes

Correct Answer - C

**Lymphatic drainage of thyroid**

- Lymph from the upper part of the gland reaches the upper deep cervical lymph nodes either directly or through the prelaryngeal nodes.
- Lymph from the lower part of the gland drains to the lower deep cervical nodes directly, and also through the pretracheal and paratracheal nodes.

## 100. Organ of corti is situated in ?

a) Basilar membrane

b) Utricle

c) Saccule

d) None of the above

Correct Answer - A

**Scala media (cochlear duct or membranous labyrinth) has 3 walls : -**

- The basilar membrane, which supports the organ of corti.
- The Reissner's membrane which separates it from the scala vestibuli.
- The stria vascularis which contains vascular epithelium and is concerned with secretion of endolymph.

## 101. Floor of 4th ventricle has ?

a) Infundibulum

b) Vagal triangle

c) Mammillary body

d) Tuber cincrium

Correct Answer - B

**Floor of 4th ventricle (Rhomboid fossa)**

- It is *diamond or rhomboidal* shaped and is formed by posterior surface of pons (upper triangular part or pontine part) and dorsal surface of medulla (lower triangular part or medullary part) junction of pons and medulla forms intermediate part. Features of 4th ventricle are :?

i. Median sulcus (a midline groove) divides the floor into two symmetrical halves.

i. Medial eminence is present an each side of median sulcus. It presents *facial* colliculus formed by genu (recurving fibers) of facial nerve looping around abducent nucleus. Facial colliculus lies in pons (i.e. in pontine part of floor).

i. Hypoglossal triangle overlying hypoglossal nucleus and vagal triangle overlying dorsal nucleus of vagus. Both of these triangle lie in the medulla (medullary part of floor).

v. Vestibular area overlies *vestibular nuclei,* partly in pons and partly in medulla.

v. Sulcus coeruleus, a bluish area due to presence of pigmented neurons containing *substantia ferruginea.*

i. *Superior and inferior favea.*

## 102. Middle meningeal artery passes through ?

a) Foramen ovale

b) Foramen lacerum

c) Foramen rotundum

d) Foramen spinosum

Correct Answer - D
Foramen spinosum

## 103. Nerve which loops around submandibular duct?

a) Mandibular nerve

b) Lingual nerve

c) Hypoglossal nerve

d) Recurrent laryngeal nerve

Correct Answer - B

**Submandibular duct**

- It is 5 cm long duct and runs forwards on hyoglossus, between lingual and hypoglossal nerves.
- At the anterior border of the hyoglossus muscle it is crossed by lingual nerve which loops around it.
- It opens into the floor of mouth, on the summit of the sublingual papilla at the side of frenulum of tongue.

## 104. Medulla oblongata is derived from ?

a) Telencephalon

b) Diencephalon

c) Mesencephalon

d) Myelencephalon

Correct Answer - D
Ans. is d i.e., Myelencephalon
Nervous system develops from ectoderm (neuroectoderm). Nervous system develops from neural tube which in turn develops by process of neurulation, i.e. formation of neural plate and its infolding into neural tube. Structures formed from neural tube are :?
A) From cranial part (enlarged cephalic part)

- Gives rise to brain. Developmental parts are :

i) *Forebrain (prosencephalon)*

- *Telencephalon :* Cerebral hemisphere and lateral ventricle.
- *Diencephalon :* Optic cup and stalk (gives rise to retina), pituitary, thalamus, hypothalamus, epithalamus, pineal gland, and third ventricle.

ii) *Midbrain (mesencephalon)*

- Cerebral aqueduct.

iii) *Hindbrain (rhombencephalon)*

- *Metencephalon :* Cerebellum, pons
- *Myelencephalon* Medulla oblongata

B) From caudal part

- Gives rise to spinal cord.

## 105. Morula is how many celled -

a) 4

b) 8

c) 12

d) 16

Correct Answer - D
Ans. is 'd' i.e., 16

- At about 16 cells stage the blastomeres tightly align by the process of compaction to form a compact ball of cells called morula (mulberry).
- This process of compaction leads to segregation of cells into two groups :

1. ***Inner cells (inner cell mass)***
2. ***Outer cells (outer cell mass)***

- Morula enters uterine cavity 4 days after fertilization.

## 106. Dental papilla give rise to ?

a) Enamel

b) Dental cuticle

c) Tooth pulp

d) None

Correct Answer - C
*Repeat from previous sessions. See explanation-5 of session-1*

## 107. Malleus and incus are derived from ?

a) 1st Arch

b) 2nd Arch

c) 3rd Arch

d) 4th Arch

Correct Answer - A
Ans. is 'a' i.e., 1st Arch
lst (mandibular arch):-
**Muscular Contribution**:-Muscles of mastication, Anterior belly of the digastric, Mylohyoid, Tensor tympani, Tensor veli palatini.
**Skeletal Contributions:-** Maxilla, mandible (only as a model for mandible ), Incus and malleus, Meckel's cartilage, Ant. ligament of malleus, Sphenomandibular ligament.
**Nerve:-** Trigeminal nerve (V2 and V3).
**Artery:-** Maxillary artery, external carotid artery.

## 108. Optic cup is derived from ?

a) Neural ectoderm

b) Surface ectoderm

c) Mesoderm

d) Neural crest

Correct Answer - A
Ans. is 'a' i.e., Neural ectoderm

## 109. Optic cup give rise to ?

a) Lens

b) Retina

c) Cornea

d) Sclera

Correct Answer - B
Retina

## 110. Excretory system of kidney is derived from ?

a) Ureteric bud

b) Mesonephros

c) Metanephros

d) None

Correct Answer - C
Ans. is 'c' i.e., Metanephros
**Development of kidney**

- Ureteric bud (mesonephros) arise from mesonephric duct and gives rise to *collecting system* of kidney (renal pelvis, major and minor calyces, *collecting tubule)* and *ureter.*
- Metanephric mesoderm (blastema or metanephors) arise from *nephrogenic cord* which in turn is derived from intermediate mesoderm. It gives rise to *excretory unit (nephron),* i.e. glomeruli, PCT, Loop of henle and DCT.

## 111. Ureteric bud arises from ?

a) Paramesonephric Dut

b) Mullerian duct

c) Mesonephric duct

d) Mesonephric tubule

Correct Answer - C

**Genital duct system**

- During 5th and 6th weeks, both male and females have two genital duct systems, deriverd from mesoderm :

1. *Mesonephric duct (wolffian duct) and mesonephric tubules.*
2. *Paramesonephric duct (Mullerian duct).*

- Mesonephric duct is the main genital duct in males as it gives rise to mainly male genital system :

## 112. Derivative of vitelline vein?

a) IVC

b) SVC

c) Ligamentum venosum

d) Ligamentum teres

Correct Answer - A
Ans. is 'a' i.e., IVC

## 113. Not true about development of ovary ?

a) Develops in genital ridge

b) Sex cords are derived from coelomic epithelium

c) Oocytes are mesodermal in origin

d) At birth ovary contains 2 million follicles

Correct Answer - C

**Development of ovary**

- Coelomic epithelium on medial side of the mesonephros becomes thickened to form genital ridge, the site where ovary develops.
- Genital ridge is covered by germinal epithelium (previous coelomic epithelium). From these germinal epithelium, cords of cells (sex cords or medullary cords) proliferate and grow into the underlying mesoderm.
- Primordial germ cells which are developed from endodermal cells of hindgut (part of yolk sac), migrate to region of developing ovary (genital ridge area) and give rise to oocytes.
- The sex cords become broken up into small masses. The cells of each mass surround one oocyte to form primordial follicle.
- At birth each ovary contains about 2 million primary follicles.

## 114. Testis lies at deep inguinal ring upto ?

a) 4 months

b) 5 months

c) 7 months

d) 9 months

Correct Answer - C
The testes develop in relation to the lumbar region of the posterior abdominal wall.
During fetal life, they gradually descend to the scrotum.
They reach the iliac fossa during third month, and *lie at the site of deep inguinal ring upto 7 month of intrauterine life.*
They pass through inguinal canal during seven month, and are normally in the scrotum by the end of eighth month.

## 115. Position of testis at 24-28 weeks of intrauterine life?

a) Inguinal canal

b) Lumbar region

c) Superficial inguinal ring

d) Deep inguinal ring

Correct Answer - D
Deep inguinal ring

## 116. True about notochord are all except?

a) Defines axis of embryo

b) Serves as primary inductor

c) Derived from hypoblast

d) Remains as nucleus pulposus

Correct Answer - C

- Notochord is a bud like structure formed by *epiblast cells* extending from cranial end of primitive streak to caudal end of prochordal plate, in between the ectoderm and endoderm. Siginificances of notochord includes following :-

i. *It defines the axis of embryo.*

i. *It functions as the primary inductor, inducing the overlying ectoderm to develop into neural plate (the primordium of CNS).*

i. *It serves as the basis for development of axial skeleton.* The notochord is an *intricate structure around which vertebral column is formed and indicates future site of vertebral bodies. However, the notochord does not give rise to vertebral column, after development of vertebral bodies,* the notochord degenerates and disappears, but parts of it persist as the nucleus pulposus of intervertebral disc.

## 117. Remnant of notochord is ?

a) Annulus fibrosus

b) Nucleus pulposus

c) Ligament flavum

d) Intertransverse ligament

Correct Answer - B
Ans. is 'b' i.e., Nucleus pulposus

- Notochord is a bud like structure formed by epihlast cells extending from cranial end of primitive streak to caudal endof prochordal plate, in between the ectoderm and endoderm. Siginificances of notochord includes following :-
- It defines the axis of embryo.
- It functions as the primary inductor, inducing the overlying ectoderm to develop into neural plate (the primordium of CNS).
- It serves as the basis for development of axial skeleton. The notochord is an intricate structure around which vertebral column is formed and indicates future site of vertebral bodies. However, the notochord does not give rise to vertebral column, after development of vertebral bodies, the notochord degenerates and disappears, but parts of it persist as the nucleus pulposus of intervertebral disc.

**118.**

## $2^{nd}$part of duodenum is derived from ?

a) Foregut

b) Midgut

c) Both foregut & midgut

d) Hindgut

Correct Answer - C
Both foregut & midgut

## 119. Stroma of cornea develops from ?

a) Neural ectoderm

b) Surface ectoderm

c) Mesoderm

d) Neural crest

Correct Answer - C
Corneal epithelium develops from Surface ectoderm.
Corneal stroma develops from Mesoderm.

## 120. Female genital tract develops from ?

a) Mesonephric duct

b) Mesonephric tubules

c) Mullerian duct

d) None

Correct Answer - C
Mesonephric duct (Wolffian duct) is the main genital duct in males as it gives rise to mainly male genital system.
Paramesonephric duct (Mullerian duct) gives rise to mainly female genital tract

## 121. Glomus cells are derived from ?

a) Surface ectoderm

b) Neuroectoderm

c) Mesoderm

d) Endoderm

Correct Answer - B

Glomus cells are derived from neural crest which itself is derivative of neuroectoderm.

- Other derivates of **neural crest** are?
  **a) *Neural derivatives***
- Sensory neurons of **spinal dorsal root ganglia.**
- **Sympathetic chain ganglia and plexus** (celiac/preaortic/renal ganglia, enteric plexus in **GIT,** i.e. Auerbachs and Meissner's)
- Parasympathetic ganglia and plexus of GIT.
- Schwann cells of peripheral nerves, satellite cells of all ganglia.
- **Adrenal medulla,** chromaffin cells, para follicular C-cells of thyroid gland.
- Melanocytes and **melanoblasts.**
  **b) *Mesenchymal derivatives***
- Dermal bones of skull : Frontal, parietal, temporal, nasal, vomer, palatine, mandible, maxillae.
- Leptomeninges : arachnoid and pia mater (Durameter is mesodermal).
- Dentine of teeth (odontoblasts).
  **Eye : choroid, sclera, iris epithelium, pupillary muscles (sphincter and dilator pupillae, ciliary muscles).**
- Pharyngeal arch cartilages.

- Retinal pigmented epithelium.
- Connective tissues of head including dermis, tendon, ligaments.
- Bulbar and conal ridges of heart.

## 122. Epithelium of vagina arises from?

a) Ectoderm

b) Wolffian duct

c) Mesoderm

d) Mesonephric duct

Correct Answer - C

**Vagina is derived from two sources :-**

1. Upper 2/3$^{rd}$ : It is derived from *Utero-Vaginal Canal,* i.e. the fused part of paramesonephric duct. Therefore, this part is mesodermal in origin.
2. Lower 1/3$^{rd}$ : It is derived from *sinovaginal bulb* which inturn is derived from *urogenital sinus.* Thus, this part is *endodermal* in origin.

**123. Which of the following is derived from I$^{st}$ arch?**

a) Frontonasal process

b) Maxillary process

c) Mandibular process

d) Both maxillary & mandibular processes

Correct Answer - D

**Face is developed from five facial primordia appear as prominences of mesenchyme:?**

1. *One frontonasal process :* Begins as a proliferation of mesenchyme on ventral surface of developing brain.
2. *Two maxillary processes :* Grow out from the upper end of each first arch.
3. *Two mandibular processes :* Grow from each first arch.

## 124. Skeletal derivative of I$^{st}$ arch ?

a) Stapes

b) Hyoid

c) Maxilla

d) Laryngeal cortilages

Correct Answer - C
Maxilla

## 125. Styloid process is derived from ?

a) 1st arch

b) 2nd arch

c) 3rd arch

d) 4th arch

Correct Answer - B
Styloid process is derived from 2nd pharyngeal arch.

**126. Pharyngeal muscles are derived from which pharyngeal arch ?**

a) 1st

b) 2nd

c) 3rd

d) 5th

Correct Answer - C
3rd

## 127. Secondary ossification center for lower end of femur?

a) Present at birth

b) Appears at 6 months of age

c) Appears at 1 year of age

d) Appears at 5 years of age

Correct Answer - A

Secondary center of lower end of femur appears at $9^{th}$ month of intrauterine life (present at birth).

**Ossification of femur**

- The femur ossifies from one primary and four secondary centres. The primary centre for the shaft appears in the seventh week of intrauterine life. The secondary centres appear, one for the lower end at the end of the ninth month of intrauterine life, one for the head during the first six months of life, one for the greater trochanter during the fourth year, and one for the lesser trochanter during the twelfth year.
- There are three epiphyses at the upper end and one epiphysis at the lower end. The upper epiphyses; lesser trochanter, greater trochanter and head, in that order, fuse with the shaft at about eighteen years. The lower epiphysis fuses by the twentieth year.

## 128. Sternochondral joint is ?

a) Primary cartilaginous

b) Secondary cartilaginous

c) Fibrous

d) Synovial

Correct Answer - A

Ans. is 'a' i.e., Primary cartilaginous

Costochondral (sternochondral) joints are primary cartilaginous joints.

**<u>Cartilaginous joints</u>**

1) *Primary cartilaginous joints (synchondrosis, or hyaline cartilage joint) :* These are :-

i. Joint between epiphysis and diaphysis of a growing long bone, i.e. physis.
i. Spheno-occipital joint
i. 1st costosternal joint *(1st chondrosternal joint)*
*. *Costochondral joints*

2) *Secondary cartilaginous joints (Symphyses or fibrocartilaginous joints) :* These are :-

i. *Symphysis pubis*
i. manubriosternal joint
i. Symphysis menti
*. *Sacroccygeal joint*
*. intervertebral disc

## 129. Innervated structures of joints are all except ?

a) Synovium

b) Capsule

c) Articular cartilage

d) Ligaments

Correct Answer - C
Ans. is 'c' i.e., Articular cartilage
**Characteristic features of articular cartilage**
1) Hyaline cartilage
*2) No innervation (no nerve supply).*
3) No blood supply (avascular).
4) No lymphatics
5) Only hyaline cartilage which has no perichondrium.
6) No ability to repair or regenerate itself.

## 130. Submucosal plexus is ?

a) Myenteric plexus

b) Auerbach's plexus

c) Meissner's plexus

d) Tympanic plexus

Correct Answer - C

**Innervation of GIT**

The gastrointestinal tract has a nervous system all its own called the *enteric nervous system.* It lies entirely in the wall of the gut, begining in the esophagus and extending all the way to the anus. The enteric nervous system is composed mainly of two plexus : -

i) Myenteric plexus orAuerbach's plexus

ii) Meissner's plexus or submucosal plexus

Extrinsic nerves (Parasympathetic and sympathetic) are connected to both myenteric and submucosal plexuses. Enteric nervous system can function independently of these extrinsic nerves and these extrinsic nerves only modify the activity of the enteric nervous system.

Therefore, peristalsis is present even if the intestine is deprived of extrinsic innervation.

*Parasympathetic stimulation enhances GI motility and secretion where as sympathetic stimulation inhibits motility and secretions.*

## 131. Hassall's corpuscles are found in?

a) Lymph nodes

b) Spleen

c) Liver

d) Thymus

Correct Answer - D
The dominant feature of medulla of thymus is its epithelial components, which are onion like structures called Hassall's Corpuscles, which have an intensely eosinophilic core of dead material,

## 132. Duct of Bellini are present in:

a) Pancreas

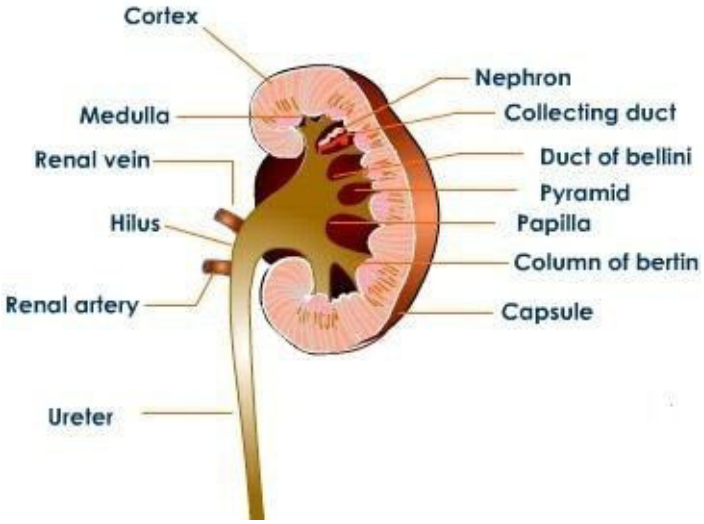
b) Liver

c) Kidney

d) Salivary gland

Correct Answer - C
Answer C. Kidney

- Papillary (collecting) ducts are anatomical structures of the kidneys, previously known as the ducts of Bellini.
- Papillary ducts represent the most distal portion of the collecting duct.
- They receive renal filtrate (precursor to urine) from several medullary collecting ducts and empty into a minor calyx.



## 133. Breast is a ?

a) Endocrine gland

b) Modified sweat gland

c) Modified sehaceous gland

d) Holocrine gland

Correct Answer - B
Breast is a modified sweat gland. It is apocrine type of sweat gland.

## 134. Valve of heister is seen in

a) Cystic duct

b) Common bile duct

c) Common hepatic duct

d) Pancreatic duct

Correct Answer - A
Ans. is 'a' i.e., Cystic duct

- The mucous membrane of the cystic duct forms a series of 5-12 crescentic folds, arranged spirally to form the so called spiral valve of Heister. This is not a true valve.

**Also know**

- Hartmanns pouch - dilated posteromedial wall of neck of gall bladder.
- Sphincter choledochus - always present - terminal part of bile duct
- Sphincter pancreaticus - usually present - terminal part of pancreatic duct
- Sphincter ampullae (of Oddi) - surrounds the hepatopancreatic ampulla

## 135. Skin over hypothenar eminence is supplied by?

a) Radial nerve

b) Median nerve

c) Anterior interosseous nerve

d) Ulnar nerve

Correct Answer - D
Ulnar nerve

## 136. Which of the following are inactive during normal respiration ?

a) Pre-Botzinger complex

b) Dorsal group of neurons

c) Ventral VRG group of neurons

d) Pneumotaxic center

Correct Answer - C
Ans. is **'c' i.e.,** Ventral group of neurons
**<u>Medullary respiratory centers</u>**

- The principal areas in the medulla oblongata concerned with regulation of respiration are : *?*

*1) Dorsal respiratory group (DRG) :* - The dorsal respiratory group of neurons are mainly *concerned with inspiration.* They descend and terminate on spinal motor neurons *innervating the primary muscles of inspiration, i.e., the diaphragm and the external intercostal muscles.*

2) *Ventral respiratory group (VRG) :* - The ventral respiratory group of neurons is *mainly concerned with forceful expiration* but also shows *some activity during inspiration.* Therefore, these neurons contribute to both expiration and inspiration. These neurons are divided into : *?*

*i) The rostral VRG neurons :* - These neurons show activity primarily synchronous with inspiration and therefore be called *inspiratory (I) neurons.* They terminate on spinal motor neurons *supplying the accessory muscles of inspiration, i.e., sternocleidomastoid, scalenes and anterior serrati.*

*ii) The ventral VRG neurons :* - These are mostly *expiratory (E) neurons.* But since the expiration is generally a passive process, E

neurons are silent most of the time. However, these neurons show activity when expiration is forceful, as during exercise. These neurons terminate on spinal motor neurons *supply the muscles of expiration, i.e., internal intercostal and abdominal muscles.*

3) *Pre-Botzinger complex :* - These neurons are responsible for generation of respiratory rhythm, i.e., the pacemaker cells which regulate the rate of respiration are located in Pre-Botzinger complex.

**Pontine respiratory centers**

- The important pontine areas concerned with respiration are : *?*

*1) Pneumotoxic center (nucleus parabrachialis medialis) : - It* is located in *upper part of pons* and transmits signals to the inspiratory area. The function of the pneumotaxic center is *primarily to limit inspiration, i.e.,* the primary effect of this center is to control the "switch-off" point of the inspiratory ramp thus controlling the depth of inspiration, i.e., the duration of the filling phase of the lung cycle. Pneumotaxic center also inhibits apneustic center further inhibiting inspiration. Therefore strong stimulation of this center results in an early termination of inspiratory ramp and hence, inspiration is shortened and the tidal volume decreases. Conversely, in the absence of inputs from this center, inspiratory ramp continues much longer and hence inspiration is prolonged and the tidal volume increases.

*2) Apneustic center :* - This center located in the *lower (caudal) part of pons.* The apneustic center excites inspiratory center (DRG) and produce a *prolonged inspiratory drive* which delays the onset of expiration. Thus, though the respiratory rhythm is established in the medulla, this rhythm is spoilt by a strong inspiratory drive orginating in the apneustic centers. However, two influences seems to keep the apneustic center in check : (i) *Pneumotaxic center of upper pons* and (ii) *Influence from stretch receptors in lung via vagus.* Both of these influence inhibit inspiratory activity.

## 137. What will occur with increase in alveolar ventilation rate ?

a) Decreased partial pressure of $O_2$ in alveoli

b) Decreased partial pressure of $CO_2$ in alveoli

c) Decreased $CO_2$ diffusion from blood to alveoli

d) Decreased $O_2$ diffusion from alveoli to blood

Correct Answer - B
Ans. is 'b' i.e., Decreased partial pressure of $CO_2$ in alveoli
Alveolar ventilation is the amount of inspired air entering in gas-exchange areas (alveoli) per minute during quite breathing. It excludes the air which remains in dead space.

## 138. Pulmonary vasodilatation is caused by ?

a) Hypoxia

b) Thromboxane $A_2$

c) Histamine

d) Angiotensin-II

Correct Answer - C
Ans. is 'c' i.e., Histamine

## 139. Isocapnic exercise is ?

a) Breathing for short duration against resistance

b) Breathing of decreased volume of ventilation

c) Breathing of increased volume of ventilation for long period

d) Breathing of decreased volume for long period

Correct Answer - C
Ans. is 'c' i.e., Breathing of increased volume of ventilation for long period

## 140. Mismatch of ventilation/perfusion ratio is seen in

a) Apex

b) Base

c) Both

d) None

Correct Answer - C
Ans. is 'C' i.e.,Both
**Ventilation perfusion ratio (V/O)**
o Considering that cardiac output is 5.0 L/min and alveolar ventilation is about 4.2 L/min, the overall ventilation: perfusion ratio is 0-8. Idealy, therefore, each alveolus should have a V/Q ratio of 0.8. However, that is not so even in normal lungs.
o Due to gravity, the apical alveoli are both underventilated and underperfused while the basal alveoli are both overventilated and overperfused. However, gravity affects perfusion much more than it affects ventilation. Hence, apical alveoli are more underperfused than underventilated while the basal alveoli are more overperfused than overventilated. Therefore, V/Q is maximun at apex (about 3-0) and least at base (about 0-6).
o Since ventilation is far in excess of perfusion at apex, comparatively little oxygen is transferred from the alveoli to the blood, and $CO_2$ transferred to the alveoli is also less. Hence the gas tension at the apices are quiet close to those of inspired air, i.e., High $Pa0_2$ and low $PaCO_2$. On the other hand, at the base of lung perfusion is better than ventilation; *Hence $Pa0_2$ and $PaCO_2$ of basal alveoli are quiet close to those of pulmonary artery, i.e., low PaO,*

*and high $PaCO_2$.* In simple words, ventilation-perfusion mismatch is responsible for high P02 with low $PCO_2$ at apex and Low $PO_2$ with high $PCO_2$ at base.

## 141. Plateau of oxygen-hemoglobin dissociation curve signifies ?

a) No oxygen is available for binding to Hb

b) No Hb molecule is available to bind with $O_2$

c) All oxygen is released to tissues

d) None of the above

Correct Answer - B

**Ans. is 'b' i.e., No Hb molecule is available to bind with $O_2$**

- Each molecule of hemoglobin can combine with upto four molecules of oxygen.
- Combination with the first molecule alters the conformation of the hemoglobin molecule in such a way as to facilitate combination with the next oxygen molecule.
- In light of this, if we look at the curve, as the $PO_2$ starts rising from 0 mm Hg upwards, initially all hemoglobin molecules in blood starts combining with their first oxygen molecule.
- This is the most difficult molecule to combine with.
- Hence saturation rises only slowly with initial rise in $PO_2$. As $PO_2$ rises further, hemoglobin molecules combine with their second, third and fourth molecules, which are progressively easier to combine with.
- Hence saturation rises steeply between $PO_2$ of 15 mm Hg and 40 mm Hg.
- When $PO_2$ rises still further, oxygen finds most of the hemoglobin molecules carrying four molecules of oxygen each.
- Since no molecules of hemoglobin can carry more than four

molecules of oxygen, there is not much scope for more $O_2$ combining with hemoglobin.

- Hence the curve becomes almost flat again beyond the $PO_2$ of 60 mm Hg.

## 142. The oxygen dissociation curve of myoglobin & hemoglobin is different due to?

a) Hb can bind to 2 oxygen molecules

b) Cooperative binding in Hb

c) Myogloobin has little oxygen affinity

d) Hemoglobin follows a hyperbolic curve

Correct Answer - B

Ans. is `b' i.e., Cooperative binding in Hb

- *Cooperative binding is responsible for sigmoid shape of the oxygen-hemoglobin dissociation curve.*
- As myoglobin is monomeric (consists of one polypeptide chain only), it can bind only one molecule of oxygen and for the same reason myoglobin cannot show the phenomenon of cooperative binding. Hence, the oxygen?myoglobin dissociation curve is hyperbola as compared to sigmoid shape of Hb-$O_2$ curve.

**Hemoglobin - $O_2$ binding**

- Each molecule of hemoglobin can combine with upto four molecules of oxygen. Combination with the first molecule alters the conformation of the hemoglobin molecule in such a way as to facilitate combination with the next oxygen molecule. In light of this, if we look at the curve, as the $PO_2$ starts rising from 0 mm Hg upwards, initially all hemoglobin molecules in blood starts combining with their first oxygen molecule. This is the most difficult molecule to combine with. Hence saturation rises only slowly with initial rise in $PO_2$. As $PO_2$ rises further, hemoglobin molecules combine with their second, third and fourth molecules, which are progressively easier to

combine with. Hence saturation rises steeply between $PO_2$ of 15 mm Hg and 40 mm Hg. When $PO_2$ rises still further, oxygen finds most of the hemoglobin molecules carrying four molecules of oxygen each. Since no molecules of hemoglobin can carry more than four molecules of oxygen, there is not much scope for more $O_2$ combining with hemoglobin. Hence the curve becomes almost flat again beyond the $PO_2$ of 60 mm Hg.

- Thus, the primary reason for the sigmoid shape of the oxygen-hemoglobin dissociation curve is that out of the four molecules of oxygen that can combine with a hemoglobin molecules, the first combines with the greatest difficulty and binding of an oxygen molecules increases affinity to next $O_2$ molecule. This phenomenon is termed as cooperative binding or cooperativity, i.e., a molecule of $O_2$ binds to a hemoglobin tetramer more readily if other $O_2$ molecules are already bound.

**Myoglobin $O_2$ binding**

- Myoglobin is present in higher concentration in red (slow) muscle fibers. *Myoglobin has greater affinity for oxygen than hemoglobin* and its $P_{50}$ is only 5 mm Hg (as compared to $PO_2$ of hemoglobin which is about 26 mm Hg). Therefore, myoglobin-oxygen dissociation curve is shifted far to the left than Hb-$O_2$ dissociation curve. It has shape of hyperbola as compared to sigmoid shape of Hb-$O_2$ curve because it binds 1 molecule of $O_2$ per mole (in comparison to Hb which binds 4 molecules of $O_2$ per mole). The role of myoglobin is to bind $O_2$ at very low $PO_2$ and release them at even lower $PO_2$, for example in *exercising muscles* where $PO_2$ close to zero.

## 143. Compensatory mechanism in acute hemorrhage?

a) Decreased myocardial contractility

b) Decreased heart rate

c) Increased heart rate

d) Increased respiratory rate

Correct Answer - C
Ans. is 'c' i.e., Increased heart rate
**<u>Compensatory mechanisms in acute hemorrhage</u>**

- In acute hemorrhage there is compensatory sympathetic stimulation which causes *:?*
  *1) Generalized vasoconstriction with increased total peripheral resistance (TFR).*
  *2) Increased heart rate (tachycardia).*
  *3) Increased cardiac contractility.*
  *4) Increased renin release causing sodium and water retention through RAA system.*
  *5) Shift of fluid from intracellular and interstitial space into vascular space.*

## 144. 'v' Wave in JVP is due to ?

a) Right atrial contraction

b) Left atrial contraction

c) Right atrial relaxation

d) Closure of tricuspid valve

Correct Answer - A
Ans. is A
The first elevation *(a wave*) corresponds to the slight rise in atrial pressure resulting from atrial contraction.
The first descent *(x descent*) reflects a fall in atrial pressure that starts with atrial relaxation.
The second elevation *(v wave)* corresponds to ventricular systole when blood is entering the right atrium from the vena cavae while the tricuspid valve is closed.
Finally, the second descent *(y descent)* reflects falling right atrial pressure as the tricuspid valve opens and blood drains from the atrium into the ventricle.

## 145. Blood supply of brain is ?

a) 1500 ml/min

b) 2000 ml/min

c) 750 ml/min

d) 250 ml/min

Correct Answer - C
Ans. is 'c' i.e., 750 ml/min
The cerebral blood flow (CBF) is about *750 ml/min (15% of total cardiac output), or 54 ml/100 gm brain tissue per minute.*

## 146. Major neurotransmitter in afferents in nucleus tractus solitarius to regulate cardiovascular system ?

a) Serotoxin

b) Glutamate

c) Glycine

d) Norepinephrine

Correct Answer - B
Ans. is 'b' i.e., Glutamate
Nucleus tractus solitarius (NTS) lies in medulla.
**It receives following afferents :?**
A) General visceral afferents
*i)* From tonsil, pharynx, posterior part of tongue, carotid body and sinus → *through glossopharyngeal nerve.*
*ii)* From pharynx, larynx, trachea, esophagus, and other thoracic and abdominal viscera → *through vagus nerve.*
B) Special visceral afferents
*i)* From anterior 2/3 of tongue (except circumvallate papillae) and palate → *through facial nerve*
*ii)* From posterior 1/3 of tongue (including circumvallate papillae) → *through glossopharyngeal nerve.*
*iii)* From posterior most part of tongue and epiglottis → *through vagus nerve.*

- NTS is involved in regulation of cardiovascular system through baroreceptors and chemoreceptors.
- *There is a general consensus that glutamate is the neurotransmitter released at the therminals of baroreceptor and chemoreceptor*

*afferents in NTS.* — www.springer.com

- However, cholinergic, GABAergic, and opioidergic mechanisms are also present in NTS.

**147. Dicrotic notch is caused by**

a) Closure of mitral valve

b) Opening of mitral valve

c) Closure of aortic valve

d) Opening of aortic valve

Correct Answer - C
Ans. is 'c' i.e.. Closure of aortic valve
**Aortic pressure curve**

- With the onset of the rapid ejection phase of the ventricular systole, the aortic pressure rises steeply to reach a maximum of about 120 mm Hg. The ejection of blood into the aorta causes a stretch on the aortic walls and makes the blood in the entire arterial system to move at a faster rate. This sets up a pressure wave that travels along the arteries. The pressure wave expands the arterial wall as it travels, and expansion is palpable as the pulse. In the later part of the ventricular systole, the aortic pressure declines and continues to decline throughout the diastole, to reach a minimum of about 80 mm Hg during the isometric contraction of the next cardiac cycle. The elastic recoil of the aorta and the resistance of arterioles help to maintain relatively high aortic pressure during diastole.
- A notch (incisura or dicrotic notch) is recorded in the early part of the downstroke of the aortic pressure curve. It corresponds to the closure of the aortic valve. It is produced by the sudden backward flow of aortic blood followed by the immediate cessation of backflow due to closure of the aortic valves.

## 148. Skin blood flow is decreased by ?

a) Dopamine

b) Isoprenaline

c) Noradrenaline

d) Acetylcholine

Correct Answer - C
**Ans. is 'c' i.e., Noradrenaline**
Autophagy is the process by which cells sequester and degrade their own cytoplasmic organelles.
During the process, autophagic vacuole is formed, which is a bilayer vacule containing unnecessary or dysfunctional organelle.
Autophagic vacule fuses with lysosome to form autophagosome (autophagolysosome).
Then, hydrolytic enzymes of lysosome degrade the organelle of autophagic vacuole.

## 149. S2 is associated with ?

a) Rapid ventricular filling

b) Atrial contraction

c) Closure of semilunar valves

d) Closure of AV valves

Correct Answer - C
**Ans. C. Closure of semilunar valves**
S2 is due to closure of semilunar valves (aortic and pulmonary valves).

## 150. Capacitance vessels have in their wall ?

a) More elastic tissue and less muscle

b) Less elastic tissue and more muscle

c) More elastic tissue and more muscle

d) Less elastic tissue and less muscle

Correct Answer - D

**Ans. is 'd' i.e., Less elastic tissue and less muscle**

Veins are capacitance vessels. They have less smooth muscle and less elastic tissue in their wall.

**Structure of vessels**

A) Structure of artery

It is made up three layers -

1.Tunica Intima

The inner most layer (towards lumen) of artery is intima.

It consists of endothelial cells which rest on basment membrane.

There is some subendothelial connective tissue.

Intima is separated from media by internal elastic lamina.

2.Tunica Media

It is mainly contains *smooth muscles* and laminae of elastic tissue

Media is separated from adventitia by external elastic lamina.

3.Tunica Adventitia

It is the *outer most layer.*

Contains collegen and elastic fibers.

B) Structure of capillaries

Capillaries are thin walled vessels made up of single layer of endothelial cells with its basement membrane. o Capillaries are of three types -

1.Continous capillaries -

These capillaries has continuous lining of endothelial cells with no

These capillaries has continuous lining of endothelial cells with no fenestration.
Basement membrane is also continuous.
2.Fenesterated capillaries
There are fenestration between the endothelial cells.
Basment membrane is continuous.
3.Sinusoidal capillaries
Both endothelial cells and basement membrane have fenestration.
In resting tissues, most of the capillaries are collapsed and blood flows through the throughfare vessels from the arterioles to the venules.
C) Structure of veins
Structure of vein is smiliar to artery except that -
1.Wall is thinner
2.Three tunicae are less well demarcated.
3.Elastic tissue is scanty and not clearly organized into distinct internal and external elastic lamina.
4.Have valves (except venae cavae and common iliac vein).

## 151. In circulatory biomechanics which of the following is true?

a) Blood viscosity is increased in anemia

b) Blood viscosity is decreased in polycythemia

c) Cardiac output is increased in anemia

d) Cardiac output is decreased in Beri-Beri

Correct Answer - C

**Ans. is 'c' i.e., Cardiac output is increased in anemia**

Cardiac output is increased in conditions which cause decrease in peripheral vascular resistance :-

**Exercise**

1. AV fistula or shunt
2. Severe anemia
3. Thyrotoxicosis
4. Wet beri-beri
5. About other options

Blood viscosity is low in anemia and high in polycythemia.

## 152. Normal capillar wedge pressure ?

a) 0-2 mm Hg

b) 5-10 mm Hg

c) 15-20 mm Hg

d) 20-30mm Hg

Correct Answer - B
Ans. is 'b' i.e., 5-10 mm Hg
*Normal capillary Wedge pressure is 4-12mm Hg.* It is a measure of left atrial pressure.

## 153. Mannitol infusion causes increase in

a) Blood viscosity

b) Osmolarity

c) Intra-ocular tension

d) Intercranial tension

Correct Answer - B
Ans. is 'b' i.e., Omolarity

## 154. Correct order of velocity ?

a) Vena cava > Aorta > Vein > Artery > Venule > Arteriole

b) Aorta > Vena cava > Artery > Vein > Arteriole > Venule

c) Aorta > Artery > Vena cava > Vein > Arteriole > Venule

d) Vena cava > Vein > Aorta > Artery > Venule > Arteriole

Correct Answer - B
Ans. is `b' i.e., Aorta > Vena cava > Artery > Vein > Arteriole > Venul

## 155. Effect of infusion of hypotonic saline?

a) Increased ICF only

b) Increased ECF only

c) Increased in both ICF and ECF

d) Increased ICF and decreased ECF

Correct Answer - C
Ans. is 'c' i.e., Increased in both ICF and ECF
After infusion of hyptonic saline causes a decline in plasma osmolality and a shift of water into interstial space (as water moves from higher osmolarity to lower osmolarity), causing decrease in ICF osmolality.
This results in shift of water from ECF to ICF.
Finally, *both ECF and ICF compartments are increased (due to increases water) and osmolality of both compartment are decreased.*

## 156. Normal QRS axis ?

a) +30 to 110°

b) -30 to +110°

c) +110° to +150°

d) -110° to -150°

Correct Answer - B
Ans. is 'b' i.e., -30 to +110°
In a normal heart, the average direction of the vector during spread of the depolarization wave through the ventricles, called the *mean* QRS vector, is about +59 degrees.
This means that during most of the depolarization wave, the apex of the heart remains positive with respect to the base of the heart.
The normal electrical axis of the heart (mean electrical axis or mean QRS vector) lies between -30° and + 100°.
If the axis is more negative than -30° it is called left axis deviation, whereas *if the axis is more positive than + 100°, it is called right axis deviation.*

## 157. Herring Breuer reflex is an increase in ?

a) Duration of inspiration

b) Duration of expiration

c) Depth of inspiration

d) Depth of expiration

Correct Answer - B
Ans. is 'b' i.e., Duration of expiration
The Hering-Breuer inflation reflex is an increase in the duration of expiration produced by steady lung inflation, and the Hering-Breuer deflation reflex is a decrease in the duration of expiration produced by marked deflation of the lung.

## 158. Carotid and aortic bodies are stimulated when ?

a) Oxygen saturation decreases below 90%

b) Oxygen saturation decreases below 80%

c) Oxygen saturation decreases below 70%

d) Oxygen saturation decreases below 60%

Correct Answer - A
Ans. is 'a' i.e., Oxygen saturation decreases below 90%
Peripheral chemoreceptors (carotid and aortic bodies) are stimulated if arterial $PO_2$ is below 60 mmHg.
At $P_{O2}$ of 60 mmHg, $O_2$ saturation is about 90% (89%).

## 159. Baroreceptor are ?

a) Carotid body

b) Carotid sinus

c) Aortic body

d) None

Correct Answer - B
Ans. is 'b' i.e., Carotid sinus

- Baroreceptors are *mechanoreceptors* that are located in the adventia of carotid artery and aorta, at specialized locations called sinuses.

1) Carotid sinus is a little bulge at the root of internal carotid artery, located just above the bifurcation of the common carotid artery. It is innervated by the sinus nerve, a branch of glossopharyngeal (IX cranial) nerve.
2) Aortic arch (aortic sinus) also contains mechenoreceptors (stretch receptors) which are similar to carotid sinus receptors. However, their afferent nerve fibers travel in the aortic nerve, a branch of Vagus (X cranial) nerve.
The sinus nerve (from carotid sinus) and aortic nerve/vagal fibers (from aortic sinus) are together called `Sinoaortic nerves'. They, together, are also refered to as 'Buffer nerves' because they are the afferents of cardiovascular reflexes that buffer abrupt changes in blood pressure.

## 160. Sleep centre is located in -

a) Basal ganglia

b) Medulla

c) Hypothalamus

d) Cerebellum

Correct Answer - C
Ans. is 'c' i.e., Hypothalamus

## 161. Umami taste is evoked by ?

a) Glucose

b) Glutamic acid

c) Quinine

d) Sodium chloride

Correct Answer - B

**Ans. is 'b' i.e., Glutamic acid**

There are four basic tastes namely *Sweet, bitter Salty and Sour.*

There mechanisms of sensory transduction are :

1) *Sweet receptor* is a *G protein coupled receptor* and leads to an increase in cAMP concentration in the sensory cells *which results in closure of* $K^+$ channels and depolarization.

2) Bitter receptors are also G protein coupled receptors and causes rise in *intracellular Ca'* by IP3-DAG system. Rise in intracellular $Ca^{+2}$ triggers neurotransmitter release.

*3) Salty-tasting* substances depolarize taste cells by activating *amiloride-sensitive* $Na^+$ *channels.*

*4) Sour-tasting* substances depolarize taste cells by *raising the intracellular H + ion* concentration, which *causes closure of* $K^+$ *channels.*

The umami taste is the fifth taste which is unique. The proposed mechanism of umami taste is through **glutamate taste sensors (glutamate receptors)** with release of neuronal **glutamic acid.**

**In nature, there are three umami substances :-**

*i) Monosodium glutamate (MSG)*

*ii) Disodium* $5^1$*-guanosine mosphosphate (GMP)*

*iii) Disodium* $5^1$*-ionsine monophosphate (IMP)*

## 162. Reward center is located in ?

a) Cerebellum

b) Amygdala

c) Hippocampus

d) Hypothalamus

Correct Answer - D
Ans. is 'd' i.e., Hypothalamus

## 163. Which is not an extrapyramidal tract ?

a) Reticulospinal tract

b) Rubrospinal tract

c) Corticospinal tract

d) Tectospinal tract

Correct Answer - C
Ans. is 'c' i.e., Corticospinal tract

## 164. While walking or standing, posture is maintain by ?

a) Basal ganglia

b) Hypothalamus

c) Cerebellum

d) Amygdala

Correct Answer - C
Ans. is 'c' i.e., Cerebellum
Cerebellum, through its connection with the red nucleus influences the activity of brainstem reticular formation and thereby gamma motor neuron activity.
Through its connections with the vestibular nucleus and vestibulospinal tract, cerebellum influnences the activity of alpha motor neurons.
Thus, *normal cerebellar function is essential for the maintenance of normal muscle tone and posture.*
The cerebellum seems to play crucial roles in walking as well as maintaing a standing posture.
Cerebellar vermis plays an important role in maintenance of standing postuk.
Basal ganglia is also involved in maintaining posture by acting as relay center for extrapyramidal pathways. But its role is not as important.

## 165. Myelination in peripheral nervous system is done by

a) Astrocytes

b) Oligodendrocytes

c) Ependymal cells

d) Schwann cells

Correct Answer - D
**Ans. is d i.e., Schwann cells**
*Myelination in central nervous system → Oligodendrocytes.*
*Myelination in peripheral nervous system → Schwann cell.*

## 166. Sensory perception involves Brodmann's area ?

a) 3, 1, 2

b) 4, 6

c) 44, 45

d) 41, 42

Correct Answer - A
Ans.A. 3,1,2
Processing of general sensory inputs primarily occurs in primary somatosensory area of parietal lobe.
Primary somatosensory area is Brodmann's area 3, 1, 2.

## 167. Vibrations are felt by ?

a) Meissner's corpuscle

b) Merkel's disc

c) Pacinian corpuscle

d) Ruffini's end organ

Correct Answer - C

**Ans. is 'c' i.e., Pacinian corpuscle**

**<u>Tactile (touch) receptors</u>**

These are *general exteroreceptors for epicritic senses.* These are divided into superficial and deep receptors.

Superficial receptors are present in the epidermis or *papillary layer of dermis.* In glabrous (nonhairy) skin these receptors are *Merkel's disc (slowly adapting)* and *Meissner 's corpuscle (rapidly adapting).* In hairy skin there are *hair follicle receptors.*

Deep receptors are present in deeper dermis or in the subcutaneous tissues. The deep receptors are same in both hair and nonhairy skin and include *Ruffini's end organ (slowly adapting)* and *Pacinian corpuscle (Rapidly adapting).*

Touch, pressure and vibration are different forms of same sensation. Pressure is felt when the force applied on the skin is sufficient to reach the deep receptors, whereas touch is felt when the force is insufficent to reach the deep receptors, therefore detected by superficial receptors (Merkel's disc, meissner's corpuscle).

Vibrations are rhythmic variations in pressure (i.e. rhymic variations of force that reaches the deep receptors). Whether a tactile receptor senses pressure or vibration depends on whether the receptor is slowly adapting or slowly adaping :?

i) Slowly adapting (Ruffini's end organ) :- Are meant to detect

sustained pressure; they are useless for vibrations.
ii) Rapidly adapting (Pacinian corpuscle) :- Stop discharge in response to sustained pressure; they are useful only when the pressure fluctuates rapidly, i.e. during vibrations. The higher the rate of adaptation of a receptor, the greater is the vibration frequency it can detect.
Thus, tactile (touch) sensation can be divided into :?
*A) Superficial (generally considered as touch) :-* Detected by *Meissner 's corpuscle (detect texture of surface, i.e. rough or smooth)* and *Merkel's disc (detect two point discrimination).*
*B) Deep*
*i)* Pressure (Deep touch) :- Detected by *Ruffini's end organ.*
ii) Vibrations :- Detected by Pacinian corpuscle

## 168. Sense organ which is having efferent supply

a) Golgi tendon organ

b) Organ of corti

c) Retina

d) Taste bud

Correct Answer - B
Ans. is 'b i.e., Organ of corti
Afferent (sensory) neurons carry information form sense organs to CNS (brain & spinal cord).
Hair cells (in organ of corti) are the sensory recepors which are also innervated by *efferent neurons.*

## 169. False regarding papillae of tongue ?

a) Fungiform papillae at tip

b) Circumvallate papillae at base

c) Foliate papillae at back edge

d) Filiform papillae have taste buds at tip

Correct Answer - D
Ans. is 'd' i.e., Filiform papillae have taste buds at tip
In tongue, taste buds are grouped in structures called papillae. Taste buds are located in the walls of papillae. There are three types of papillae :-
*i) Fungiform papillae :-* Are especially numerous near the *tip and the margins of the tongue.*
*ii) Circumvallate (Vallate) papillae :-* These are the *largest papillae* and are distributed to a *V-shaped region near the base of tongue.*
*iii) Foliate papillae :-* Confined to the *back edge of the tongue.*
Besides these three types of papillae, there is also a fourth type, the filiform papillae but these have no taste buds.

## 170. Fever is produced by ?

a) PGF2α

b) PGE2

c) PGI2

d) PGD2

Correct Answer - B
Ans. is 'b' i.e., PGE2
Fever is elevated body temperature due to resetting of hypothalamic thermostat above the normal level.
*IL-1 (most potent), TNF-α and IL-6* are pyrogens (fever producing cytokines).
But they do not act directly.
They stimulate the release of PGE2, which resets the hypothalamic thermostat at higher level.
*Thus, PGE2 is the final effector in production of fever.*

## 171. Endogenous pyrogens act by ?

a) Increasing heat generation

b) Raising thermostat point of hypothalamus

c) Causing vasoconstriction

d) By Non-shivering thermogenesis

Correct Answer - B
Ans. is 'b' i.e., Raising thermostat point of hypothalamus
Bacterial toxins (exogenous pyrogens) stimulate inflammatory cells to secrete pyrogenic cytokines (endogenous pyrogens), e.g. *IL-I, TNF-a , and IL-6.*
These endogenous pyrogenes stimulate PGE2 release in hypothalamus, which raises temperature set point of hypothalamus to cause fever.

## 172. Which of the following increases appetite ?

a) CART

b) α - MSH

c) AGPP

d) Insulin

Correct Answer - C
Ans. is 'c' i.e., AGPP

## 173. Sharp pain is transmitted by which type of fibres?

a) Aα

b) Aβ

c) Aδ

d) C

Correct Answer - C
Ans. is 'c' i.e., Aδ
Sharp somatic pain (fast pain) is carried by AS fibres.
**Pain is carried by two types of fibers : ?**
i) Aδ → These are relatively fast. Therefore the pain carries by these is *fast pain* (epicritic pain or first pain).
ii) C → These are slow, therefore the pain carries by these is slow pain (protopathic pain or second pain).

## 174. Myosin and actin filaments are kept in place by

a) Tropomyosin

b) Troponin

c) Actinin

d) Titin

Correct Answer - D
Ans. is 'd' i.e., Titin

- The side-by-side relationship between the myosin and actin filaments is difficult to maintain.
- This is achieved by a large number of filamentous molecules of a protein called titin.
- *Titin molecules act as a framework that holds the myosin and actin filaments in place* so that the contractile machinery of the sarcomere will work.

**Important muscle proteins**

1. Myosin:- Myosin is the protein that constitutes the *thick filaments.* Myosin of skeletal muscle is *myosin-IL* Myosin participates in the contractile mechanism and also acts as an ATPase.
2. Actin:- Actin is the major protein of *thin filament.* It is the actin that slides over myosin during contraction.
3. Tropomyosin: - It is the other protein of *thin filament.* It covers the active sites (myosin-binding sites) on actin. When $Ca^{+2}$ concentration of cytoplasm (sarcoplasm) is raised, it uncovers the active sites of actin and allows the contraction So, *the 'cross-bridge cycling' is switched off or on by the tropomyosin molecule which slides on the actin molecule to cover or uncover the active sites on*

*it.*

## 175. True about cerebellar neuronal connections ?

a) Climbing fibres from inferior olivary nucleus

b) Mossy fibres from inferior olivary nucleus

c) Climbing fibres are inhibitory to Purkinje cells

d) Mossy fibres are inhibitory to Purkinje cells

Correct Answer - A

Ans. is 'a' i.e., Climbing fibres from inferior olivary nucleus

**Neuronal circuit in cerebellum**

Afferent for cerebellum comes through two fibers : climbing fibers and Mossy fibers. *Climbing fibers* which brings information only from the inferior olivary nuclei and establish excitatory synapes with purkinje cells. All other afferent input to the cerebellum is brought by the other types of fibers, called Mossy fibers which establish *excitatory synapse with granule cells* in the granular cell layer. The axon of granule cells, called *parallel fibers, stimulate the purkinje cells.* Thus mossy fibers, like the climbing fibers, also end up in stimulating the purkinje cells.

*Granule cells are the only stimulatory (excitatory) cells in cerebellar cortex.*

The *parallel fibers (axons of granule cells)* also stimulate three types of *interneurons :- Stellate and basket cells in the molecular layer,* and *Golgi cells in the granular layer.* Stellate and basket cells inhibit purkinje cells. Golgi cells, also activated by collateral from mossy fibers (besides parallel fibers), inhibit transmission from mossy fibers to granule cells.

Overall, *climbing fiber inputs exert a strong excitatory effect on a single purkinje cell, Whereas mossy fiber inputs exert a weak*

*excitatory effect on many purkinje cells via the granule cells.*
After complex inhibiting and excitatory interactions of various fibers and cells in the cortex, the output of cerebellar cortex, is projected to deep cerebellar nuclei by axons of pyramidal cells (only output cells of cerebellar cortex). The output of the Purkinje cells is inhibitory to the deep cerebellar nuclei. However, the output of deep cerebellar nuclei to the brain stem and thalamus is always excitatory because, beside inhibitory inputs of purkinje cells, deep cerebellar nuclei also receive excitatory inputs from afferent mossy and climbing fibers which usually are more prominent.

## 176. Post-tetanic potentiation is due to -

a) Hyperpolarization of muscle fibres

b) Rapid $K^+$ efflux

c) Increased availability of $Ca^{++}$

d) Rapid $Na^+$ influx

Correct Answer - C
Ans. is 'c' i.e., Increased availability of $Ca^{++}$
*"Repetitive stimulation enhances force development due to rise in intracellular $Ca^{++}$, a phenomenon called posttetanic potentiation. It is due to increased phosphorylation of myosine light chain with increased number of cross bridges."*

## 177. Which of the following has small representation in somatosensory area of cerebral cortex ?

a) Lips

b) Thumb/fingers

c) Tongue

d) Trunk

Correct Answer - D
Ans. is 'd' i.e., Trunk
A distinct topographic represention of the body can be demonstrated in somatosensory area-I.

- Each side of the cortex receives sensory information from the opposite side of the body only *(contralateral representation).*
- The body *is* represented upside down (vertical) in the postcentral gyms, i.e. *the face is represented at the foot of the gyrus whereas the legs and feet are represented at the top extending on the medial surface.*
- Some parts of body like face (especially lips, tongue) and fingers have a proportionately large representation than the other areas like the trunk. The cortical representation of the part of the body is proportionate to its innervation density (number of sensory receptors) rather than its size.

## 178. Resting membrane potential in cardiac muscle ?

a) -70 mV

b) +70 mV

c) -90 mV

d) +90 mV

Correct Answer - C
Ans. is 'c' i.e., -90 mV
Normal RMP in myocardial fibers is about -90 mV.

## 179. Noradrenaline is major neurotransmitter in ?

a) Postganglionic parasympathetic fibres

b) Postganglionic sympathetic fibres except in sweat glands

c) Autonomic ganglia

d) Preganglionic autonomic fibres

Correct Answer - B

Ans. is 'b' i.e., Postganglionic sympathetic fibres except in sweat glands

*Neurotransmitter in all preganglionic autonomic nerves (both sympathetic and parasympathetic) is acetylcholine (A CH)*

*Neurotransmitter in all ganglia (both sympathetic and parasympathetic) is acetylcholine.*

*Neurotransmitter in postganglionic parasympathetic fibres is acetylcholine.*

*In posganglionic sympathetic fibres, the major neurotransmitter is noradrenaline (NA) except in renal and mesentric vasculature where it is dopamine, in sweat glands, some blood vessels where it is acetylcholine and in adrenal medulla where it is adrenaline.*

*Most of the visceral organs are supplied by both sympathetic and parasympathetic system except;*

.. Blood vessels, spleen, sweat glands and hair follicles receive only sympathetic innervation.

2. Ciliary muscle gastric and pancreatic glands receive only parasympathetic innervation.

- In general sympathetic and parasympathetic systems are antagonistic except :

Refractory period of atrial fibres is decreased by both.

*At almost all organs except heart, cholinergic system has excitatory activity and adrenergic system has relaxing properties Sympathetic system stimulates (Tachycardia, Positive inotropic) and parasympathetic system depresses (Bradycardia, Negative inotropic) the heart.*

## 180. Receptor for BDNF ?

a) TrK-A

b) TrK-B

c) TrK-C

d) None

Correct Answer - B
Ans. is 'B' i.e., TrK-B

## 181. Sensations which are appreciated in thalamus

a) Proprioception

b) Pain & temperature

c) Tactile sensations

d) Pressure

Correct Answer - B
Ans. is 'b' i.e., Pain & temperature
*Pain and temperature are primarily appreciated by the thalamus.*
For other forms of sensation, the thalamus is unable to analyze the details of sensations.
*Fibers carrying tactile and proprioceptive information ascend through the thalamocortical pathway to area 3 of primary somatic sensory cortex through the thalamic radiation.*
Therefore, if the somatosensory cortex is removed, tactile sensations and proprioceptions are lost, but pain and temperature sensations persist.

## 182. 51 S2 is checked by which reflex ?

a) Knee jerk

b) Patellar reflex

c) Calcaneal reflex

d) None

Correct Answer - C
**Ans. C. Calcaneal reflex**

- S1 S2 is checked by ankle jerk (also called Calcaneal reflex or achilles reflex).

## 183. Mitral and periglomerular cells are seen in ?

a) Medulla

b) Olfactory bulb

c) Primary visual cortex

d) Geniculate body

Correct Answer - B
Ans. is 'b' i.e., Olfactory bulb
The sensory receptors for *olfaction (smell)* are located in the olfactory mucous membrane. In human, the olfactory mucous membrane (olfactory neuroepithelium) located in the roof of the nasal cavity near the septum. Because of its location high in the nasal cavity, the olfactory mucosa is not directly exposed to the flow of inspired air entering the nose.
The olfactory mucosa contains *olfactory receptors.* The olfactory receptors are unique in that the receptor cell itself is a neuron. The olfactory receptor cell has cilia projecting in the nasal mucosa which act as receptor for olfaction (These are dendrites of neuron/receptor cells). *The axons of olfactory neuron (olfactory receptor cells) form olfactory nerve* which passes through cribriform plate and terminates in the olfactory bulb. In olfactory bulb axons of olfactory nerve synapse with dendrides of mitral cells to form the olfactory glomeruli. *Mitral cells are the principal output neurons of olfactory bulb and their axons form the olfactory tract.*
The olfactory bulb also contains periglomerular cells, which are inhibitory neurons and granule cells which have no synapse and make reciprocal synapses with mital and tufted cells.
Like the taste fibers, olfactory tract also projects to the primitive parts

of the brain as well as the neocortex. The projections to the primitive parts are principally to the *pyriform area (olfactory cortex), amygdala and entorhinal cortex, which in turn projects to the hippocampus.* The pathway to the *neocortex* involves a relay in the olfactory tubercle, and then in the thalamus, the output of which projects to the *orbitofrontal cortex.*

## 184. Weber Fechner law is related to ?

a) Phantom limb

b) Force of contraction in heart

c) Intensity of stimulus and sensation felt

d) Cortical plasticity

Correct Answer - C
Ans. is 'c' i.e., Intensity of stimulus and sensation felt

## 185. Prostaglandins are produced by ?

a) Neutrophils

b) Endothelium

c) Macrophages

d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above

## 186. Prostaglandin was discovered from ?

a) Tear

b) Saliva

c) Seminal fluid

d) Blood

Correct Answer - C

**Ans. C. Seminal fluid**

- The name prostaglandin comes from the prostate gland. When prostaglandin was first isolated from seminal fluid, it was believed to have been added from the prostate."

## 187. Aromatase produces estrogen from -

a) Progesterone

b) Cortisol

c) Aldosterone

d) Androgen

Correct Answer - D
**Ans. is 'd' i.e., Androgen**

## 188. Action of progesterone ?

a) Increased sensitivity of uterus to oxytocin

b) Inhibits LH secretion

c) Decrease in body temperature

d) Causes proliferative changes in uterus

Correct Answer - B
**Ans. is 'b' i.e., Inhibits LH secretion**

## 189. Corpus leuteum starts regressing after how many days of ovulation ?

a) 5 days

b) 10 days

c) 24 days

d) None

Correct Answer - B
Ans. is 'b' i.e., 10 days
If ovum is not fertilized, the corpus luteum starts degenerating *around day 24 of cycle (about 10 days after ovulation)* and is eventually is replaced by fibrous tissue, forming corpus albicans. Degeneration of corpus luteum is due to decline in level of LH (which is required for maintenance of corpus luteum) and increase in secretion of inhibin by luteal cell itself.

## 190. First polar body is formed after ?

a) Mitosis

b) First meiosis

c) Second meiosis

d) Fertilization

Correct Answer - B
Ans. is 'b' i.e., First meiosis
**Oogenesis**
Oogenesis refers to the process of formation of ova from the primitive germ cells. Unlike fetal testis (in which spermatogenesis beings at puberty), the fetal ovary begins oogenesis by 10 weeks of gestation. o The sequence of events in oogenesis are :
*i)* The primitive germ cells undergo mitotic divisions to form *oogonia (diploid Oogonium is unique in that it is the only female cell in which both 'X' chromosomes are active.*
ii) The oogonia proliferate by mitosis to form primary oocytes (diploid cells).
iii) Primary oocytes formed from the oogonia enter a prolonged prophase (diplotene stage) of the first meiotic division and remain in this stage until ovulation occurs after puberty.
iv) Primary oocytes *completes the first meiotic division* at puberty just before ovulation to form secondary oocyte (haploid cell) and 1st polor body.
v) Secondary oocyte immediately begins *second meiotic division* but this division stops at metaphase and is completed only if the mature ovum (ootid) is fertilized with sperm. At that time second polor body (polocyte) is extruded and the fertilized ovum proceeds to form a new individual. *Fertilization normally occurs in the ampulla of*

*fallopian tube.*

**191. Fertilization takes place after how much time of ovulation ?**

a) 1-2 days

b) 5-6 days

c) 8-12 days

d) > 12 days

Correct Answer - A
Ans. is 'a' i.e., 1-2 days

## 192. Implantation occurs at ?

a) 2-3 days

b) 6-7 days

c) 15-20 days

d) 20-25 days

Correct Answer - B
Ans. is 'b' i.e., 6-7 days

## 193. Implantation occurs on which menstrual cycle day ?

a) 5-7 days

b) 20-22 days

c) 14-18 days

d) 26-28 days

Correct Answer - B

**Ans. is 'b' i.e., 20-22 days**

- Implantation occurs at 6-7 days after fertilization.
- Ovulation occurs at $14^{th}$ day of menstrual cycle and fertilization occur within 24 hours after ovulation.
- Thus, implantation will correspond to 20-22 days of menstrual cycle.

## 194. Blastocyte comes out on which day after fertilization ?

a) 4-7 days

b) 10-12 days

c) 12-15 days

d) 15-20 days

Correct Answer - A
Ans. is 'a' i.e., 4-7 days
Free floating unimplanted blastocyst is seen on 4-5 days.

## 195. Growth hormone secretion is stimulated by ?

a) Increased blood glucose

b) Decreased blood glucose

c) Cortisol

d) Somatostatin

Correct Answer - B
Ans. is 'b' i.e., Decreased blood glucose
**Regulation of GH secretion**
GH secretion is regulated by GHRH released from hypothalamus.
GH is secreted in a pulsatile fashion throughout the life, with elevated rates of secretion immediately after birth and at puberty.
Interestingly, large bursts of secretion occur at night during the onset of deep sleep.
Stimuli that increase secretion of GH are hypoglycemia, exercise, fasting, protein meals, aminoacids (like arginine), stress, glucagon, pyrogen, lysin vasopressin, apomorphins, L-dopa & a-adrenergics, estrogen, androgens and 2-deoxyglucose.
Stimuli that decrease secretion of GH are REM sleep, glucose, Somatostatin, cortisol, FFA, GH itself, IGF-1, and medroxyprogesteron.

## 196. Hormones required during puberty ?

a) LSH

b) Testesterone

c) Leptin

d) All of the above

Correct Answer - D

**Ans. is 'd' i.e., All of the above**

- Puberty is triggered by a release of gonadotropins (FSH and LH) from pituitary gland.
- These hormones act as signals to the gonads (testes/ovaries) that trigger the production of -
  *i) Estrogen, progesterone and some testosterone in women.*
  ii) *Testosterone in men.*
- In both males and females, testosterone is responsible for development of pubic hair, accelerated bone growth, body odor and acne during puberty. For boys, testosterone is responsible for the process of virilization, including the enlargement of the penis, increased libido and growth of facial and chest hair.
- Estrogen is the major hormone responsible for female puberal development. It causes development of breast and thickening of endometrium.
- Progesterone causes proliferation of acini in mammary glands and converts watery cervical secretion to viscid and scanty.
- Leptin facilitates release of gonadotropin releasing hormone (GnRH), thereby helping in pubertal onset.
- Other hormones which are involved in puberty are thyroxine and growth hormone.

## 197. Pubarche is due to ?

a) GH

b) Progesterone

c) Testosterone

d) Estrogen

Correct Answer - C
Ans. is 'c' i.e., Testosterone

## 198. Cells which surround the oocyst in graafian follicle are called ?

a) Discus proligerus

b) Cumulus oophoricus

c) Luteal cells

d) Villus cells

Correct Answer - B
Ans. is 'b' i.e., Cumulus oophoricus
Oocyte lies eccentrically in the graafian (ovarian) follicle.
It is surrounded by some granulsa cells that are given the name cumulus oophoriacus (or cumulus ovaricus).
The cells that attach it to the wall of the follicle are given the name discus proligerus.

## 199. Following changes are seen during capacitation of a sperms except ?

a) Increased permeability to calcium

b) Decreased permeability to calcium

c) Removal of cholesterol from acrosome

d) Increased motility

Correct Answer - B

**Ans. is 'b' i.e., Decreased permeability to calcium**

**Capacitation of sperm (spermatozoa)**

- Spermatozoa leaving the testis (seminiferous ubules) are not fully mobile. They continue their maturation and acquire their mobility during their passage through epididymis. From epididymis they come to vas deference, distal end of which also receives the secretions of seminal vesicle, and continues as the ejeculatory duct. The ejeculatory duct joins the prostatic urethra.
- Once ejeculated into the the female, vaginal secretions improve the motility and fertilizing ability of sperms. Further exposure to secretions of female genital tract (in uterus and/or fallopian tube) further improves the mobility and fertilizing ability of the sperms. The beneficial effects of stay in the female genital tract are collectively called capacitation, from the isthmus, capacitated sperms move rapidly to the ampullas, where fertilization takes place.

**Following changes occur during capacitation :-**

- Uterine and fallopian tube fluids wash away the various inhibitory factors that suppress sperm activity in male genital tract.
- Removal of cholesterol vesicle from acrosome so that acrosomal membrane becomes weak and can release enzyme at the time of fertilization.

- Increase membrane permeability to calcium ion.

## 200. Estrogen Beta receptors are found on

a) Uterus

b) Blood vessels

c) Ovary

d) Vagina

Correct Answer - C
Ans. is 'c' i.e., Ovary

## 201. Spermatogenesis takes place in ?

a) Epididymis

b) Seminiferous tubule

c) Ductus deferens

d) Prostate

Correct Answer - B
Ans. is 'b' i.e., Seminiferous tubule
Spermatogenesis occurs in seminiferous tubules.

- Spermatogenesis refers to the process of *formation of spermatozoa (sperm) from primitive germ cells (spermatogonia).*
- Steps in spermatogenesis involve :?

i) Spermatogonia (primitive germ cells) undergo mitosis to form primary *spermatocytes.* Both spermatogonia and primary spermatocytes have diploid chromosomes (46 chromosomes or diploid of 23 chromosomes).
ii) Primary spermatocytes undergo meiosis to form secondary spermatocytes. Secondary spermatocytes have haploid (23) chromosomes.
*iii)* Secondary spermatocytes undergo *mitosis* to form *spermatids.*
*iv) Spermatids do not divide further but undergo morphological changes to form sperms (spermatozoa). This step of formation of spermatozoa from spermatids is called spermiogenesis. The spermiogenesis takes place in the deep folds of cytoplasm of sertoli cells.*

## 202. Conceptus enters uterine cavity in which cell stage ?

a) 4 cells

b) 8 cells

c) 16 cells

d) 32 cells

Correct Answer - C
Ans. is 'c' i.e., 16 cells
**Fertilization and implantation**
Fertilization refers to fusion of male and female gametes (i.e. spermatozoon and ovum). *It takes place in the middle segment (ampulla) of fallopian tube.* Before fertilization, the ovum and sperms reach the ampulla for fertilization. Fusion of spermatocyte and ovum leads to formation of zygote. First week of development begins immediately after fertilization and includes :?
i) Cleavage of zygote : Zygote (fertilized ovum) starts dividing immediately and large zygote is subdivided into smaller daughter cells called blastomeres. Blastomeres are still surrounded by zona pellucida. Cleavage occurs in fallopian tube (uterine tube).
ii) Formation of morula : At about 16 cells stage the blastomeres tightly align by the process of compaction to form a compact ball of cells called morula (mulberry). This process of compaction leads to segregation of cells into two groups (i) *inner cells (inner cell mass),* and (ii) *outer cells (outer cell mass).* Morula enters uterine cavity 4 days after fertilization.
iii) Formation of blastocyst : As the morula enters the uterine cavity, uterine fluid diffuses through zona pellucida and fills small intercellular gaps between blastomeres, and morula is converted to

blastocyst. Blastocyst consists of :?

*a) Zona pellucida :* Outer covering.

*b) Embryoblast :* A group of centerally located cells of inner cell mass and later give rise to tissues of embryo proper.

*c) Trophoblast :* A thin outer layer of cells formed from outer cells mass and later give rise *extraembryonic tissues.*

*d) Blastocele :* Cavity of blastocyst :

The region of blastocyst containing embryoblast is known as *embryonic pole* and the opposite pole, the *abembryonic pole.* The trophoblasts overlying the embryoblast at embryonic pole is called polar trophoblast and that occupying the rest of wall called mural trophoblast. Between 5-6 days after fertilization, blastocyst hatches from zona pellucida, and this naked blastocyst is ready for implantation

## 203. Thyroid gland is stimulated by which hormone during pregnancy ?

a) Prolactin

b) HCG

c) Human placental lactogen

d) ACTH

Correct Answer - B

**Ans. is 'b' i.e., HCG**

- The endocrine system undergoes noteworthy changes during pregnancy.
- The pituitary, thyroid and parathyroid glands appear enlarged.
- *The enlargement of thyroid gland occurs under the influence of hCGs pituitary thyrotropin (TSH) and human chorionic thyrotropin from placenta.* This results in an increase in thyroxine which stimulates metabolic activity in mother and fetus.
- Increased parathyroid hormone stimulates liberation of calcium ion from maternal bones for fetal use.
- Increased output of ACTH from pituitary stimulates secretion of :-

i. *Glucocorticoids :* It mobilizes amino acids for protein synthesis in fetal tissues.

i. *Aldosterone :* Promotes fluid retention in pregnancy.

## 204. FSH and LH both are inhibited by ?

a) Cortisol

b) Aldosterone

c) Estrogen

d) Progesterone

Correct Answer - C
Ans. is 'c' i.e., Estrogen
Consistent with the phenomenon of negative feedback in which the secretion of the target hormone inhibits its trophic hormone, *pregesterone inhibits LH* and inhibin inhibits FSH.

- *Estrogen, whose secretion is stimulated by both LH and FSH, inhibits both LH and FSH.*
- Progesterone and estrogen act at both hypothalamic and pituitary levels while inhibin secreted by granulosa cells acts only on the pituitary.
- Under certain conditions, estrogen causes stimulation (positive feedback) rather than inhibition of LH, e.g., at ovulation.

## 205. Insulin secretion is normally stimulated by ?

a) GLP-1

b) GLP-2

c) VIP

d) α-adrenergic receptors

Correct Answer - A
Ans. is 'a' i.e., GLP-1

- Recently, attention has been focused on glucagon - like polypeptide 1 (7-36) (GLP-1 [7-36]) as an additional gut factor for insulin secretion and GLP-1 (7-36) is more potent insulinotropic hormone.

**Regulation of insulin secretion**

**Factors affecting insulin secretion are : -**

i) Simulating insulin secretion :- Glucose; Mannose; Amino acids (arginine, leucine); Intestinal hormones (GIP. Gastrin, Secretin, CCK, GLP -1); β-keto acids; Parasympethetic stimulation (acetylcholine); cAMP; β-adrenergic stimulation; theophylline; Sulfonylureas; and certain endocrine hormones like growth hormone, Glucagon and glucocorticoids.

ii) Inhibiting insulin secretion : - Somatostatin; 2-deoxyglucose; mannoheptulose; a-adrenergic stimulation, P-adrenergic inhibitors; galanin; Diazoxide; Thiazide diuretics; $K^+$ depletion; Phenytoin; Alloxan; microtubule inhibitors; and insulin itself.

## 206. Effect of GLP-1 ?

a) Increased aldosterone secretion by adrenal

b) Increased PTH secretion

c) Increased insulin secretion from beta-cells of pancreas

d) Increased testosterone secretion from Leydig cells

Correct Answer - C
Ans. is 'c' i.e., Increased insulin secretion from beta-cells of pancreas

## 207. Insulin mediated glucose transport is seen in ?

a) Adipose tissue

b) Brain

c) RBC

d) Kidney

Correct Answer - A
Ans. is 'a' i.e., Adipose tissue

- Insulin stimulates the uptake of glucose by myocytes (skeletal muscle, cardiac muscles), adipocytes (adipose tissue) and hepatocytes. Tissues that do not depend on insulin for glucose uptake include brain, erythrocytes (RBC), the epithelial cells of kidney & intestine, Liver, and Cornea & lens of eye.
- The mechanism through which insulin increases glucose uptake is different in different tissues. In the muscle and adipose tissues, insulin increase facilitated diffusion by increasing glucose transporter (GLUT4) on the cell membrane.
- In the liver, insulin stimulates glucose entry into hepatocytes indirectly by induction of glucokinase so that the glucose entering the liver cells is promptly converted to glucose - 6 - phosphate (glucose trapping). This keeps the intracellular glucose concentration low and favours entry of glucose into the liver. Thus, *though the liver do not depend on insulin for glucose uptake, insulin stimulates glucose entry into hepatocytes.* That means glucose entery can occur in liver without the action of insulin, but this is facilitated by insulin. On the other hand, myocytes (skeletal and cardiac muslces) and adipocytes (adipose tissue) are dependent on insulin for glucose uptake.

## 208. Role of growth hormone in spermatogenesis ?

a) Late division of spermatocytes

b) Early division of spermatogonia

c) Formation of Acrosomes

d) Stimulation of sertoli and Leydig cells

Correct Answer - B
Ans. is `b' i.e., Early division of spermatogonia
Growth hormone specifically promotes *early divisions of spermatogonia* themselves. In the absence of GH, spermatogenesis is severely deficient or absent.
Growth hormone is also essential for general metabolic process in testis.

**Hormones involved in spermatogenesis**

Spermatogenesis is influenced by many hormones. Hormones required for spermatogenesis are *FSH, LH, testosterone, estrogen, growth hormones inhibin and activin.*
FSH is responsible for *initiation of spermatogenesis.* It binds with sertoli cells and spermatogonia and induces the *proliferation of spermatogonia.* It stimulates certoli cells to secrete *endrogen binding protein, inhibin, mullerian inhibing substance and estrogen.*
LH stimulates leydig cells to secrete testosterone.
Testosterone is the *principles hormone which directly stimulates spermatogenesis.* It is responsible for the sequence of remaining stages of spermatogenesis (after initiatin by FSH). It is also responsible for *maintenance of spermatogenesis.*
Estrogen is formed from testosterone (by aromatase) in sertoli cells. It is essential for spermeogenesis (last step of spermatogenesis, i.e.

formation of spermatozoa from spermatids).
Growth hormone is essentialy promotes *early division of spermatogonia.*
Inhibin plays an important role in regulation of spermatogenesis by feedback inhibition of FSH secretion.
Activin stimulates FSH secretion and stimulates spermatogenesis.

## 209. Growth hormone has its effect on growth through?

a) Directly

b) IG1-1

c) Thyroxine

d) Intranuclear receptors

Correct Answer - B
Ans. is 'b' i.e., IGI-1
**GH has two major functions :-**
*i) Growth of skeletal system :-* The growth is mediated by somatomedins (IGF). Increased deposition of cartilage (including chondroitin sulfate) and bone with increased proliferation of chondrocytes and osteocytes.
*ii) Metabolic effects :-* Most of the metabolic effects are due to *direct action of GH.* These include *gluconeogenesis, decreased peripheral utilization of glucose (decreased uptake), lipolysis and anabolic effect on proteins.*

## 210. Growth hormone does not cause ?

a) Gigantism

b) Acromegaly

c) Diabetes mellitus

d) Hypothyroidism

Correct Answer - D
Ans. is 'd' i.e., Hypothyroidism
**Physiological effects of Growth hormone**

- Growth hormone has two major action, i.e., (1) Stimulation of skeletal growth, and (2) Regulation of metabolism. 3) Stimulation of skeletal growth

The effect of GH on skeletal growth is mediated by somatomedins (Insulin-like growth factors : IGF). They are synthesized mainly *in the liver.* The growth promoting action of somatomedins is helped by their insulin like actions. GH, through somatomedin (IGF-1), stimulates proliferation of chondrocytes and osteocytes resulting in increased deposition of chondroitin sulfate in catilage and increased ossification of the newly formed cartilage.
GH deficiency in early life causes dwarfism (small height). GH excess in early life leads to *gigantism,* whereas growth hormone excess in adulthood results in acromegaly.
2) Regulation of metabolism
*Protein metabolism :* - GH has predominantly *anabolic effects* on skeletal and cardiac muscle where it promotes amino acid transport into cells and increase protein synthesis.
*Carbohydrate and fat metabolism :* - The effects of GH on carbohydrate and fat metabolism are complicated by the fact that *GH has anti-insulin effects, whereas somatomedins it produces have*

*insulin like effects:-*
i) Anti-insulin effects due to direct effect of GH include **decreased peripheral utilization of glucose, increased gluconeogenesis, hyperglycemia,** and lipolysis. Due to its anti-insulin effects GH excess can cause **insulin resistant diabetes mellitus.**
ii) Insulin like effects due to somatomedins (IGF) include **antilipolytic activity,** and other insulin like effects.

## 211. Which of the following is an ionic channel ?

a) α -1 receptors

b) β - 1 receptors

c) Nicotinic cholinergic receptors

d) Muscarinic cholinergic receptors

Correct Answer - C
Ans. is 'c' i.e., Nicotinic cholinergic receptors

## 212. Chloride shift is due to ?

a) Generation of $HCO^-_3$ in RBCs

b) Metabolism of glucose in RBCs

c) Formation of $O_2$-Hb complex in RBCs

d) None

Correct Answer - A

**Ans. is 'a' i.e., Generation of $HCO^-_3$ in RBCs**

- Carbon dioxide is transported in blood as plasma bicarbonate.
- *Red blood cells (RBCs) play a major role* in the mechanism because RBCs contain the enzyme carbonic anhydrase that catalyzes the reaction $CO_2 + H_2O = HCO_3 +$
- Hence when $CO_2$ diffuses into the RBC, it reacts chemically with water to generate HCO3-.
- The ft ions are mopped up by hemoglobin, which is an excellent buffer.
- This enables the reaction to proceed in the forward direction.
- The $HCO_3$- ions generated diffuse out into the plasma in exchange for Cl- ions that diffuse into RBCs simultaneously.
- The movement of chloride ions into RBC is called Chloride shift.
- The above events results in an increase in total number ions inside the RBC, which increases its osmolarity.
- As a result, water enters the RBC through osmosis.
- The RBCs carrying $CO_2$ in bicarbonate form will therefore be somewhat larger than normal.
- Hence the hematocrit of venous blood is normally 3% greater than that of arterial blood. o In the lungs, $Cl^-$ moves out of the RBCs and they shrink.

## 213. Insulin resistance down-regulates -

a) GLUT-1

b) GLUT-2

c) GLUT-3

d) GLUT-4

Correct Answer - D
Ans. is 'd' i.e., GLUT-4

**214. Maximum amount of $K^+$ ion is seen in which GI secretion ?**

a) Saliva

b) Colonic

c) Gastric

d) Jejunal

Correct Answer - A
Ans. is 'a' i.e., Saliva

## 215. Tone of lower esophageal sphincter is increased by?

a) NO

b) VIP

c) Acetylcholine

d) Epinephrine

Correct Answer - C
Ans. is 'c' i.e., Acetylcholine
**Lower esophageal sphincter**

- Unlike the rest of the esophagus, the musculature of the gastroesophageal junction (lower esophageal sphincter; LES) is tonically active but relaxes on swallowing.
- The tonic activity of the LES between meals prevents reflux of gastirc contents into the esophagus. o The LES is made up of three components.
- The esophageal smooth muscle is more prominent at the junction with the stomach (intrinsic sphincter).
- Fibers of the crural portion of the diaphragm, a skeletal, a skeletal muscles, surround the esophagus at this point (extrinsic sphincter) and exert a pinchcock-like action on the esophagus. In addition, the oblique or sling fibers of the stomach wall create a flap valve that helps close off the esophagogastric junction and prevent regurgitation when intragastric pressure rises.
- The tone of the LES is under neural control.
- *Release of acetylcholine from vagal endings causes the intrinsic sphincter to contact, and release of NO and VIP from interneurons innervated by other vagal fibers causes it to relax.*
- Contraction of the crural portion of the diaphragm, which is

innervated by the phrenic nerves, is coordinated with respiration and contractions of chest and abdominal muscles.

- Thus, the intrinsic and extrinsic sphincters operate together to permit orderly flow of food into the stomach and to prevent reflux of gastric contents into the esophagus.

## 216. Pepsinogen is activated by ?

a) Enterokinase

b) Enteropeptidase

c) $H^+$

d) Trypsin

Correct Answer - C
Ans. is c i.e.,$H^+$
Pepsin is secreted by chief cells of stomach in an inactive (zymogen) form called pepsinogen.
Acid (IF) in lumen of stomach converts pepsinogen to active pepsin.
Pepsin once formed also attacks pepsinogen producing more pepsin molecules by autocatalysis.

## 217. Bile acid has a detergent action due to ?

a) Formation of soap

b) Formation of zwitter ion

c) Amphipathic nature of bile salts

d) Formation of medium chain triglycerides

Correct Answer - C

**Ans. is c i.e., Amphipathic nature of bile acids**

Bile-salts help in digestion of fat by emulsification of fat in small intestine by detergent action of bile salts.

The detergent action of bile salts is due to their amphipathic property.

Emulsification increases the surface to volume ratio of the lipid droplets facilitating the action of lipases.

Bile salts also help in formation of *micelles.*

Micellar formation solubilizes the digested fats and provides a mechanism of their absorption into the enterocytes.

## 218. Digestion of disaccharides occurs at ?

a) Mouth

b) Stomach

c) Small intestine

d) Large intestine

Correct Answer - C

**Ans. is 'c' i.e., Small intestine**

- Digestion of disaccharides (maltose, sucrose and lactose) occurs by the enzymes present in brush border os small intestinal epithelial cells.
- Maltase (a-glucosidase) breaks 1: 4 linkages in maltose and maltotriose and releases glucose (two molecules of glucose from maltose and three molecules of glucose from maltotriose). Isomaltase (a-limit dextrinase) breaks 1 : 6 a linkages of alpha-limit dextrin and releases glucose. *Isomaltase dextrinase) is the only enzyme that attacks 1 : 6a linkage.*
- Sucrose is hydrolysed into fructose and glucose by sucrase (an enzyme present in brush border of intestinal epithelium). Lactose is hydrolysed into galactose and glucose by lactase ((3-glucosidase). Trehalase hydrolyzes trehelose (a 1:1 a - linked dimer of glucose) into two glucose molecules. Trehalose is found in mushrooms.

**219. Which of the following is passively absorbed in gut ?**

a) Glucose

b) Lipids

c) Fructose

d) Amino-acids

Correct Answer - B
Ans. is 'b' i.e., Lipids

## 220. Amount of gastric juice secreted per day ?

a) 500-1000 ml

b) 1000-1500 ml

c) 2000-2500 ml

d) 3000-3500 ml

Correct Answer - C
Ans. is 'c' i.e., 2000-2500 ml

## 221. Main enzyme involved in digestion of fatty food?

a) Lingual lipase

b) Gastric lipase

c) Pancreatic lipase

d) Phospholipase

Correct Answer - C
**Ans. is 'c' i.e., Pancreatic lipase**
Ebner's glands on the dorsum of the tongue secrete lingual lipase and the stomach also secretes a lipase (gastric lipase).
However, they are of very little significance in fat digestion.
*Fat digestion essentially begins in the duodenum* with entry of pancreatic and biliary secretions. o Pancreatic juice contains lipase (pancreatic lipase), the most important enzyme for fat digestion.
*The pancreatic lipase digests triglycerides (triacylglycerols) into free fatty acids and 2-monoglycerides (2? m on ocylg lycerols).*
Pancreatic lipase hydrolyzes 1-and 3-bonds of triglycerides with relative sparing of 2-bonds, so the principal products of its action are free fatty acids and 2-monoglycerides.

## 222. Effect of cholecystokinin on GIT ?

a) Increases gastric acid secretion

b) Increases small intestinal peristlasis

c) Increases gastric motility

d) Relaxes gall bladder

Correct Answer - B
Ans. is 'b' i.e., Increases small intestinal peristalsis

## 223. True about iron absorption are all, except ?

a) Major site of absorption is duodenum

b) Stored as Ferritin

c) Absorbed in ferrous form

d) Pancreatic secretions improves the absorption

Correct Answer - D

**Ans. is 'd' i.e., Pancreatic secretions improves the absorption**

**<u>Iron absorption</u>**

- Iron is absorbed from upper small intestine mainly duodenum.
- In diet iron occurs in two forms, haeme iron and inorganic (non-haeme) iron.
- Haem iron is better absorbed than inorganic iron, but the major fraction of diet is inorganic iron.
- Inorganic iron is mostly in ferric form; needs to be reduced to ferrous form because iron is absorbed in ferrous form.
- After absorption ferrous form is once again oxidized to ferric form inside enterocytes.
- A fraction of absorbed iron is rapidly delivered to plasma transferrin.
- However, most of the iron is deposited in the enterocytes as ferritin, some to be transferred more slowly to plasma transferrin, and some to be lost when senescent mucosal cells (enterocytes) are sloughed into the intestine.
- Iron absorption is regulated according to the demand, e.g., when there is iron deficiency, absorption increases.
- This regulation is mediated by *"iron metabolism regulatory hormone", i.e., hepcidin* that inhibit iron absorption.
- When there is iron deficiency, concentration of hepacidin falls and

there is increase iron absorption.

- Hepacidin also decreases release of iron from storage sites.

**Transport and storage of iron**

- Iron is transported is blood in combination with a glycoprotein transferrin.
- Iron is transported into cells through attachment of transferrin to specific membrane bound receptors.
- Iron is stored as ferritin (major storage form) or haemosiderin.
- Ferritin is a complex of iron and apoferritin (iron + apoferritin ferritin).
- Iron is mainly stored in *reticulo-endothelial cells* monocytes/macrophages of *liver, spleen, bonemarrow.*
- It is also stored in hepatocytes (parenchymal cells of liver) and *myocytes* of skeletal muscles. Note :
- Iron is stored in ferritin in ferric form.

**224.** **Iron absorption is increased by the following factor in diet:**

a) Vitamin-C

b) Phytic acid

c) Fibre diet

d) Phosphates

Correct Answer - A

In a vegetarian diet, nonheme iron is absorbed very poorly because of the inhibitory action of a variety of dietary components, particularly phosphates, phytates and high fibre content. *Ascorbic acid and meat facilitate the absorption of nonheme iron.* Ascorbate forms complexes with and/or reduces ferric to ferrous iron. Meat facilitates the absorption of iron by stimulating production of gastric acid; other effects also may be involved. Either of these substances can increase availability several fold.

**Ref:** Kaushansky K., Kipps T.J. (2011). Chapter 37. Hematopoietic Agents: Growth Factors, Minerals, and Vitamins. In B.C. Knollmann (Ed), *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 12e.

## 225. Maximum water reabsorption in the Gastrointestinal tract occurs in ?

a) Stomach

b) Jejunum

c) Ileum

d) Colon

Correct Answer - B
Ans. is 'b' i.e., Jejunum
**Water absorption from GIT**

- Water and electrolytes need no digestion and are absorbed as such.
- There is approximately 9 liters of water input : Ingested water : 2·0 litres, Saliva : 1·5 litres, gastric juice : 2.5 litres, bile 0·5 litre, pancreatic juice : 1·5 litres, and small intestine secretions 1-0 litre.
- Out of these 9 litres, 7·7 litres (85%) is absorbed in small intestine and 1·0 - 1·5 litres (5-10%) is absorbed in large intestine (colon).
- Total 8·8 litres of water is absorbed and 0·2 litre is excreted in feces.
- In small intestine, most of the water is reabsorbed in the jejunum.

## 226. Gamma glutamate carboxypeptidase is linked with absorption of ?

a) Riboflavin

b) Niacin

c) Folic acid

d) Pyridoxinel

Correct Answer - C
Ans. is 'c' i.e., Folic acid

- Folic acid or pteroylglutamic acid is a parent compound for a group of substances called folates.
- Naturally occurring folic acid typically occurs as pteroylpolyglutamate, which is simple folic acid that has been conjugated by gamma peptide linkage with six additional glutamyl units.
- These pteroylpolyglutamates are hydrolysed to pteroylmonglutamates in the process of intestinal absorption.
- The small intestinal mucosa contains gamma glutamate carboxypeptidase, a hydrolytic enzyme usually known as folate conjugase, with releases monglutamic folate, which is rapidly absorbed from the upper small intestine. Thus gamma glutamate carboxy peptidase is involved in the absorption of folic acid.

## 227. Migrating motor complex is due to which GI hormone ?

a) Gastrin

b) Motilin

c) CCK

d) VIP

Correct Answer - B
**Ans. is** 'b' i.e., **Motilin**
**<u>Migratory motor complex (MMC)</u>**
The gastric antrum shows bursts of propulsive *(peristalitic)* muscular activity every 90 minutes. The activity is conducted along the entire length of the small intestine, from stomach to distal ileum, at a rate of about 5 cm per minute. As soon as the activity reaches the terminal ileum, a new wave begins in the stomach. The purpose of MMC is to clear the stomach and small intestine of luminal contents in preparation for the next meal. The MMCs are initiated by motilin.

## 228. Gastric acid secretion is stimulated by all except-

a) Gastric distension

b) Gastrin

c) Smell of food

d) Somatostatin

Correct Answer - D

**There are following phases of gastric acid secretion : ?**

1. The cephalic phase :- Just as salivary secretion may start before food enters the mouth, gastric secretion is also intitiated before food enters the stomach. Sight, smell or even thought of food stimulate gastric acid secretion. It is by parsympathetic system through vagus. This phase accounts for 20% of acid secretion.
2. The gastric phase :- This phase of acid secretion comes into play when food makes contact with the gastric mucosa. Acid secretion in this phase is brought about two factors :- (i) Hormonal stimulation due to gastrin release and (ii) Stretch of stomach wall due to gastric distension *which activates a vago-vagal reflex as well as a local intragastric reflex.* This phase accounts for *72-80%* of acid secretion.
3. The intestinal phase :- Once the food enters upper portion of small intestine (i.e., duodenum) it causes small amounts of gastric juice secretion because of *gastrin released from dudenal mucosa.* While the intestinal phase play only a minor role in stimulation of gastric secretion, presence of food in the intestine plays a major role in its inhibition. With the entry of food into the duodenum, gastric secretion starts slowing down. *The presence of acid, fats, and products of protein digestion; and increased osmolarity in the duodenum* inhibit gastric secretion by :- (i) Hormonal mechanism : These mentioned

stimuli cause the release of *several intestinal hormones like secretin,* cholecystokinin (CCK), *vasoactive intestinal peptide (VIP), gastric inhibitor polypeptide (GIP) and somatostatin.* These local hormones inhibit the gastric secretion as well as gastric motility. (ii) Neural mechanism (enterogastric reflex) : The above mentioned stimuli inhibit gastric secretion and motility by intrinsic neural reflex.

**229. True about calcium reabsorption in the kidney?**

a) Most of the calcium reabsorption occurs in DCT

b) Major regulating factor is Parathormone

c) Parathormone decreases calcium reabsorption

d) Increased plasma phosphate decreases calcium reabsorption

Correct Answer - B
Major regulating factor is parathormone.

- The primary controller of renal tubular reabsorption is parathormone.
- It increases calcium reabsorption in Loop of Henle (thick ascending limb) and distal tubules.
- Most of the calcium (6590) is reabsorbed in PCT.
- Increased plasma phosphate increases calcium reabsorption.

## 230. Correct formula is ?

a) GFR = Kf x 10

b) Kf = GFR x10

c) Kf = GFR x 125

d) GFR =Kf x 125

Correct Answer - A

**Ans. A. GFR = Kf x 10**

- The GFR is determined by (l) the sum of the hydrostatic and colloid osmotic forces across the glomerular membrane, which gives net filtration pressure, and (2) the glomerular capillary filtration coefficient (Kr).
- Mathematically, the GFR equals the product of Kf and the net filtration pressure.

## 231. Fibrin is degraded by ?

a) Thrombin

b) Fibrin

c) Plasmin

d) None

Correct Answer - C

- Coagulation must be balanced with fibrinolysis to limit the hemostatic plug to the site of injury.
- Injured vascular endothelium secret *plasminogen activator* that converts inactive plasminogen to active plasmin.
- *Plasmin breaks down fibrin* resulting in production of fibrin *degradation products.*
- Fibrinolytic system is regulated by plasminogen activator inhibitors (PAIs) that are secreted by endothelium.

## 232. Gene for Rh antigen is located on chromosome ?

a) 1

b) 4

c) 9

d) 19

Correct Answer - A
Ans. is 'a' i.e., 1

## 233. Sirtuins are associated with ?

a) Memory

b) Metabolism

c) Vision

d) Olfaction

Correct Answer - B

**Ans. is 'b' i.e., Metabolism**

- Sirtuins are a family of highly conserved *$NAD^+$ dependent deacetylase 5* that act as cellular sensors to detect energy availability and modulate metabolic process.
- Two mammalian sirtuins are involved in controling metabolic process : SIRT-1 (in nucleus) and SIRT-2 (in mitochondria).
- They are activated by high $NAD^{\pm}$ levels (low cellular energy status). They, then, deacetylate a variety of proteins causing *induction of catabolic processes and inhibition of anabolic processes.*
- SIRT-1 and SIRT-3 coordinately increase cellular energy stores and ultimately maintain cellular energy homeostasis.
- *Genetic variant in SIRT-1 gene is associated lower risk of cardiovascular mortality and with better cognitive functioning.*
- SIRT-1 variants are associated with decreased basal energy expenditure and a lower lipid peroxidation rate. Therefore, it has been proposed that genetic variation in SIRT-1 may determine the response rates of individuales undergoing *caloric restriction and increased physical activity.*
- Genetic variants of SIRT-3 may be associated with increased longevity (increased lifespan), but there is no evidence of such an association.

## 234. Sirtuins are associated with ?

a) Antioxidant mechanism in body

b) Logetivity of life span

c) Regeneration of liver after partial resection

d) Carcinogenesis in human

Correct Answer - B
Ans. is 'b' i.e., Logetivity of life span

## 235. Normal uric acid level is ?

a) 1-2 mg/dl

b) 2-3 mg/dl

c) 3-6 mg/dl

d) 10-15

Correct Answer - C
Ans. is 'c' i.e., 3-6 mg/dl

## 236. Most diffusible ion across membrane -

a) $Na^+$

b) $K^+$

c) $Cl^-$

d) None

Correct Answer - C

**Ans. is 'c' i.e., $Cl^?$**

Among the given options, Cl- has lowest permeability coefficient and maximum permeability.

**Permeability of membrane**

- As the major middle portion of membrane (core of the membrane) is formed by hydrophobic region of phospholipids, this portion is impermeable to the usual water-soluble substances, such as ions, glucose and urea. Conversely, fat-soluble substances, such as oxygen, carbon dioxide, and alcohol, can penetrate this portion of the membrane with ease.
- The permeability coefficients of small molecules in the lipid bilayer *correlate with their solubilities in nonpolar (hydrophobic) region and thus their permeability.*

## 237. Dose-response curve in Hormesis ?

a) Straight line

b) Sigmoid

c) Inverted U or J shaped

d) Hyperbola

Correct Answer - C
Ans. is 'c' i.e., Inverted U or J shaped
Hormesis is a dose response phenomenon in which low doses have stimulatory effect while high doses have inhibitory effect.
The dose response curve may be *J-shaped* or *inverted U shapted,* the latter being observed, for example, with the effect of chemotactic peptides on neutrophil adhesion.

## 238. Beta-2 transferrin is found in ?

a) Blood

b) Urine

c) Tear

d) CSF

Correct Answer - D

**Ans. is 'd' i.e., CSF**

- Beta-2 transferrin is an isoform of transferrin.
- It is found in cerebrospinal fluid (CSF).
- It is not found in other body fluids (blood, mucus, tear, saliva, urine).
- Therefore, it is a *specific marker for CSF* and is used for diagnostic of CSF leaks.

## 239. Which of the following is an example of active transport?

a) Movement of water across cell membrane

b) Movement of oxygen across cell membrane

c) Co-transport of amino acids with sodium

d) None of the above

Correct Answer - C

Ans. is 'C' i.e., Co-transport of amino acids with $Na^+$

- Active transport of Na + and K + is one of the major energy-using processes in the body.
- The active transport of Na + is coupled to the transport of other substances (secondary active transport).
- For example, the luminal membranes of mucosal cells in the small intestine contain a symport that transports glucose into the cell only if Na + binds to the protein and is transported into the cell at the same time.

## 240. Life span of neonatal RBC ?

a) 60-90 days

b) 90-120 days

c) 120-150 days

d) 150-200 days

Correct Answer - A
Ans. is 'a' i.e., 60-90 days

## 241. Lifespan of fetal RBC is ?

a) Same as adult RBC

b) 1/4 of adult RBC

c) 1/2 of adult RBC

d) 2/3 of adult RBC

Correct Answer - D
Ans. is 'd' i.e., 2/3 of adult RBC
*"Life span of fetal RBC is about 2/3' of the adult RBC, i.e. about 80 days."*

## 242. Autophagic vacuoles fuse with ?

a) Golgi complex

b) ER

c) Lysosome

d) Mitocondria

Correct Answer - C
Ans. is 'c' i.e., Lysosome

## 243. Feed forward inhibition synapse seen in

a) Medulla

b) Cerebellum

c) Basal ganglia

d) Hypothalamus

Correct Answer - B
Ans. is `b' i.e., Cerebellum
*Feed forward control system is employed during the regulation of temperature.*
In feed-forward inhibition, a neuron is connected through two pathways one excitatory and one inhibitory.
For example, in cerebellum the stimulation of Basket cells produces IPSPs (inhibitory postsynaptic potentials) in Purkinje cells.
However, the basket cells and the Purkinje cells are excited by the same parallel-fiber excitatory input.
This arrangement is called *feed-forward inhibition* and helps to prevent the duration of the excitation produced by any given afferent impulse.

## 244. Motor protein in organ of corti ?

a) Kinesin

b) Albumin

c) Dynein

d) Myosin

Correct Answer - D
Ans. is d i.e., Myosin

- The inner hair cells of organ of corti have 50-200 ciliated structure called stereocilia.
- The top of each stereocilium is linked to the side of next adjacent higher stereocilium by means of a thin filamentous strucuture called the tip-link.
- Mechanically gated ion channels are located at these attachment points on the sides of stereocilia. Each stereocilium comprises of several actin filaments encased by a plasma membrane.
- The opening and closing of the ion channels is accomplished through the binding and unbinding of proteins at terminal ends of the tip links with a group of channel motor proteins (myosin) which move up and down the actin filaments of stereocilia.

## 245. Type of collagen present in cornea ?

a) Type I

b) Type II

c) Type III

d) Type IV

Correct Answer - A
**Ans. is 'a' i.e., Type I**

**246. Which of the following is present in cornea ?**

a) Hyaluronic acid

b) Chondroitin sulfate

c) Dermatan sulfate

d) Heparan sulfate

Correct Answer - B
**Ans. is 'b' i.e., Chondroitin sulfate**

## 247. True about gap junctions are all, except ?

a) Transmit electric signals

b) Allow ions to pass

c) Intercellular space 1000 nm

d) Seen in cardiac muscle

Correct Answer - C
Ans. is 'c' i.e., Intercellular space 1000 nm
Gap junctions are intercellular connections consist of a pair of hemichannels (connexons) inserted into the membrane of adjacent cells.
Each connexone is made of six identical protein subunits called connexins which enclose a central channel.
When the corresponding connexons of adjacent cell link up end-to-end, they form a continuous channel that permits substances to pass through from cell to cell.
*At gap junctions, the intercellular space narrows down to 3nm,* thereby helping in binding the cells together. o However, their real physiological significance lies in *allowing ions to flow through them, i.e. they conduct ionic current.*
This *enables electrical excitation to spread from cell to cell,* as in *smooth and cardiac muscles.*
The *pore size of gap junctions decreases when intracellular Ca' is high or pH is low,* both of which are commonly associated with cell damage. Closure of gap junctions in response to these stimuli isolates damaged cells so that the $Ca^{+2}$ and *1-1*$^{+}$ do not spread from the damaged to normal cells.

## 248. In starvation, earliest to become depleted -

a) Carbohydrates

b) Proteins

c) Fats

d) None

Correct Answer - A
Ans. is 'a' i.e., Carbohydrates
**Metabolic alteration during fasting-starvation**
o he metabolic changes observed in fasting are generally *opposite to those described for absorptive (fed) state.* In the absence of food, plasma levels of glucose, amino acids, and TGs fall, triggering a decline in insulin secretion and an increase in glucagon release. This results in *decreased insulin: glucagon ratio.* Which is responsible for most of the metabolic changes.

## 249. False about total body water (TBW) ?

a) ICF is 2/3$^{rd}$ of TBW

b) In newborn TBW is 60% of body weight

c) Premature newborns have more TBW

d) In adults, TBW is 60% of body weight

Correct Answer - B
Ans. is 'b' i.e., In newborn TBW is 60% of body weight
In a term newborn, TBW is 70-80% of body weight. It is more in premature newborn than in term newborn.
Other options are correct.

**250. Which of the following equation is correct regarding equilibrium potential for diffusion ?**

a) EMF = 25 CA/CB

b) EMF = 41 CA/CB

c) EMF = 61 CA/CB

d) EMF = 80 CA/CB

Correct Answer - C

**Ans. C. EMF = 61 CA/CB**

- When two ionic solution (ions) A and B of different concentration (Ca and Cb) of an ion separated by a permeable membrane, the ions tend to diffuse along their concentration gradient.
- Since ions are charged particles their diffusion can be stopped by an appropriate electrical potential (E) applied across the membrane.
- The magnitude and polarity of the potential (equilibrium potential) that must be applied to side A of the membrane for stopping the diffusion of ions (Ea) is given by nernst equation, i.e., the equilibrium potential for an ion is calculated by Nernst equation.

## 251. Which of following is a microfilament ?

a) Tubulin

b) Actin

c) Desmin

d) Vimentin

Correct Answer - B
Ans. is 'b' i.e., Actin

**252. Which of the following is not an intermediate filament?**

a) Keratin

b) Desmin

c) Tubulin

d) Lamin

Correct Answer - C
Ans. is `c' i.e., Tubulin

## 253. All belong to molecular motor family except ?

a) Kinesin

b) Dynein

c) Myosin

d) Actin

Correct Answer - D
Ans. is 'd' i.e., Actin
**Molecular motors**
Molecular motors are *protein with ATPase or GTPase activity* that move organelles, proteins, and other components of cell to all parts of the cells. These proteins produce force movement in wide variety of cellular processes including vesicular transport, cell division, nuclear migration, muscle contraction, mechanochemical transduction and others. *Molecular motors use energy to generate this force (molecular motors are ATPase/ GTPase). Important cytoskeletal molecular motors are :?*
*i) Kinesin (an ATPase) :-* Involved in *axoplasmic transport* and *uses hydrolysis of ATP* to move vesicles down the axon toward the positive (+) end of microtubule formation.
ii) *Dynein (an ATPase) :- It* also *uses ATP.* there are two types of dynein : ?
*a) Cytosolic dynein :-* Involved in *axoplasmic flow* to move vesicle in opposite direction, i.e., towards the negative end of microtubules.
*b) Axonemal dynein :-* Power ciliary and flagellar movement.
iii) *Dynamin (a GTPase) :- Uses GTP* and is involved in endocytosis.
iv) *Myosin (an ATPase) Uses ATP* and is involved in muscle contraction by binding with actin.

**254. Electric potential of resting membrane for a given electrolyte is given by which equation ?**

a) Nernst

b) Goldman

c) Donnan-Gibbs

d) None

Correct Answer - A
Ans. is 'a' i.e., Nernst

## 255. Hemoglobin binds/transports all except ?

a) CO

b) $O_2$

c) $SO_2$

d) $CO_2$

Correct Answer - C
Ans. is 'c' i.e., $SO_2$

## 256. All are true about phosphorus except ?

a) Comprises 1 % of the total body weight

b) 85% remains in the bones

c) Diet is not a common source

d) Parathormone acts on NaPiIIc receptors

Correct Answer - D
Ans. is 'd' i.e., Parathormone acts on NaPilic receptors

## 257. Extrinsic system of coagulation is activated by

a) Factor XI

b) Factor X

c) Factor XII

d) Factor III

Correct Answer - D
**Ans. is d i.e., Factor III**

## 258. Increased BMR is associated with ?

a) Increased body fat store

b) Increased glycognenesis

c) Increased glycolysis

d) Increased lipogenesis

Correct Answer - C

Ans. is 'c' i.e., Increased glycolysis

- Increased BMR is associated with hypermetabolic state which is characterized by :?

**A) *Carbohydrate metablism***

i) ↑ Glycolysis
ii) ↓ Gluconeogenesis
iii) ↓ Glycogenesis
iv) ↑ Glycogenolysis

**B) *Lipid metablism***

i) ↓ Lipogenesis
ii) ↑ Lipolysis
iii) ↓ Cholesterol Synthesis
iv) ↓ Triacylglycerol Synthesis
v) ↓ Lipoprotein degradation
vi) ↑ Ketogenesis

**C) *Protein metablism***

i) Increased protein degradation
ii) Decreased protein biosynthesis

## 259. Carbohydrate in ABO blood group antigens is ?

a) Glucose

b) Fructose

c) Inulin

d) Maltose

Correct Answer - B
**Ans.'b' Fructose**
ABO antigens are glycoproteins, i.e. saccharides (carbohydrates) linked with polypeptides.
**There are four main groups :**
Blood group A: Containing A antigen
Blood group B : Containing B antigen
Blood group AB : Containing both 'A' and 'EV antigen
Blood group 0 : No ABO antigen
'A' and 'EV antigens are derived from H-antigen. H-antigen is formed by adding fucose to terminal galactose of backbone strucuture. The addition of N-acetyl-D-galactosamine or D-galactose to the galactose residue of H-antigen confers 'A' or 'B' antigen, respectively.

## 260. Factor X is ?

a) Hageman factor

b) Stuart-Prower factor

c) Christmas factor

d) Tissue factor

Correct Answer - B
Ans. is 'B' i.e., Stuart-Prower factor

## 261. Gamma globulin are synthesized in ?

a) Liver

b) Spleen

c) Kidney

d) Plasma cells

Correct Answer - D
Ans. is 'd' i.e., Plasma cells
Liver synthesizes most of the proteins of body except immunoglobulins (gamma globulins), which are synthesized by plasma cells.

## 262. NO acts on platelets through ?

a) cAMP

b) Adenosine

c) cGMP

d) TX-$A_2$

Correct Answer - C
Ans. is 'c' i.e., cGMP

## 263. Isoform of LDH in skeletal muscles ?

a) LDH-1

b) LDH-2

c) LDH-3

d) LDH-4

Correct Answer - D
Ans. is 'd' i.e., LDH-4

- Skeletal muscles contain LDH-4 and LDH-5

## 264. Urease is a/an ?

a) Oxidoreductase

b) Lyase

c) Ligase

d) Hydrolase

Correct Answer - D
functionally, belong to the superfamily of amidohydrolases and phosphotriesterases
Hydrolases --> All digestive enzymes (Pepsin,trypsin', Lipases, esterases), lysosomal enzymes'urease'and phosphatase.

## 265. Transferases are classified as ?

a) EC-1

b) EC-2

c) EC-3

d) EC-4

Correct Answer - B
**Ans. B. EC-2**

## 266. True about acid phosphatase is ?

a) Acts at pH 8-9

b) Prostate isoform is tartarate resistant

c) Erythrocyte isoform is inhibited by cupric ions

d) All of the above

Correct Answer - C

**Acid phosphatase**

Acid phosphatase (ACP) hydrolyzes phosphoric acid esters at pH 5-6.

It is found in different isoforms in *prostate, spleen, liver, erythrocytes, platelets and bones.*

Prostatic and erythrocyte isoform can be differentiated by *?*

*i) Prostatic isoform is inhibited by tartarate* (tartarate sensitive), whereas erythrocyte isoform is not.

*ii) Erythrocyte isoform is inhibited by formaldehyde and cupric ions,* whereas prostatic isoform is not.

Acid phosphatase, particularly prostatic enzyme, is unstable at room temperature above 37°C and at pH above 7·0 and more than 50% of the acid phosphatase activity may be lost in 1 hour at room temperature.

## 267. CO acts by inhibiting which component of respiratory chain ?

a) Cytochrome b

b) Cytochrome C oxidase

c) NADH CoQ reductase

d) Oxidative phosphorylation

Correct Answer - B

**Ans. 'B' Cytochrome C oxidase**

**Inhibitors of Electron transport chain (Respiratory chain)**

- *Complex I:-* Barbiturates *(amobarbital),* piericidin A, *rotenone,* chlorpromazine, guanethidine.
- *Complex II:-* Carboxin, TTFA, malonate.
- *Complex* III**:-** Dimercaprol, BAL, actinomycin A, Naphthyloquinone.
- *Complex IV (cytochrome c oxidase) :- Carbon monoxide (CO), cyanide (CN),* $H_2S$**,** azide (N3-)

## 268. NADH CoQ reductase is inhibited by ?

a) Rotenone

b) Carbonmonoxide

c) Antimycin

d) Atractyloside

Correct Answer - A

Rotenone inhibits complex I (NADH-CoQ reductase).
**Inhibitors of electron transport chain?**
Inhibitors of respiratory chain may be divided into three groups : ?
1) Inhibitors of electron transport chain proper
These inhibitors inhibit the flow of electrons through the respiratory chain. This occurs at following sites.
*i) Complex I (NADH to CoQ) is inhibited by : - Barbiturates (amobarbital), Piericidin A (an antibiotic), rotenone (an insectiside), chlorpromazine (a tranquilizer), and guanethidine (an antihypertensive). These inhibitors block the transfer of reducing equivalents from FeS protein to Coe.*
*ii) Complex II is inhibited by : - Carboxin* and *TTFA* inhibit transfer of electon from FADH2 to CoQ, whereas *malanate* competitively inhibit from succinate to complex II.
*iii) Complex III (Cytochrome b to cytochrome C1) is inhibited by : - Dimercaprol, antimycin A, BAL (British antilewisite), Naphthyloquinone.* These inhibitors block the transfer of electrons from cytochrome b to cytochrome CI.
*iv) Complex IV (cytochrome C oxidase) is inhibited by :* - Carbon monoxide, $CN^-$, $H_2S$ and azide ($N_3$). These inhibitors block the transfer of electrons from cytochrome aa3 to molecular oxygen and

therefore can totally arrest cellular respiration.

2) Inhibitors of oxidative phosphorylation

These compounds directly inhibit phosphorylation of ADP to ATP. Oligomycin inhibits Fo component of Fo $F_1$ ATPase. Atractiloside inhibits translocase, a transport protein that transports ADP into mitochondria for phosphorylation into ATP.

3) Uncouples

As the name suggests, these componds block the coupeling of oxidation with phosphorylation. These compounds allow the transfer of reducing equivalents in respiratory chain but prevent the phosphorylation of ADP to ATP by uncoupling the linkage between ETC and phosphorylation. Thus the energy instead of being trapped by phosphorylation is dissipated as heat. Uncouplers may be :-

*i) Natural :- Thermogenin, thyroxine*

*ii) Synthetic :-* 2, 4-dinitrophenol (2, 4-DNP), 2, 4-dinitrocresol (2, 4-DNC), and CCCP (chlorocarbonylcyanidephenyl hydrazone).

## 269. In oxidative pathway, NADPH is produced in ?

a) Cytosol

b) Mitochondria

c) Ribosome

d) Peroxisomes

Correct Answer - A

**Ans. is 'a' i.e., Cytosol**

- NADPH is produced mainly in HMP shunt, which occurs cytosol.
- HMP is an alternative route for the oxidation of glucose (beside glycolysis).
- It is also called as *"pentose phosphate pathway", "Dickens - Horecker pathway", "Shunt pathway"* or *"phosphogluconate oxidative pathway".*
- HMP shunt is required for provision of reduced NADPH and fiver-carbon sugars e.g. ribose (Pentose phosphates) for nucleic acid synthesis.
- *Normally, 90% of glucose is oxidized by glycolysis and 10% is oxidized by HMP shunt.*
- However, in liver and RBCs HMP shunt accounts for oxidation of 30% glucose.
- HMP shunt occurs in the cytosol.
- It is highly active in *liver,* adipose tissue, *adrenal cortex, lens, cornea, lactating (but not the nonlactating) mammary gland. Gonads (testis, ovary) and erythrocytes.*
- Activity of this pathway is minimal in muscle and brain, where almost all of the glucose is degraded by glycolysis.

## 270. Role of molecular oxygen in ETC ?

a) Transfer of reducing equivalent to CoQ

b) Transfer of reducing equivalent from cytosol to mitochondria

c) To act as last electron acceptor

d) Generation of ATP

Correct Answer - C

**Ans. is 'c' i.e., To act as last electron acceptor**

**Structural organizations of components of ETC**

3 Components of respiratory chain do not function as discrete carriers of reducing equivalent but are organized *into four complexes* each of which acts as a specific oxidoreductase. Coenzyme Q and cytochrome C are not parts of any complex and are not fixed in the inner mitochondria! membrane. The other components are fixed in the membrane. These components are arranged in order of increasing redox potential. Therefore, reducing equivalents (electrons) flow in one direction, I ---> II --> III --> IV, only because redox couple with low redox potential is better electron donor where as the one with high redox potential is electron acceptor. Thus, reducing equivalents (electrons) flow through the chain from the components of more negative redox potential to the components of more positive redox potential.

i) Complex I (NADH - CoQ reductase) catalyzes the transfer of electron from NADH to coenzyme Q (CoQ).

ii) Complex II (Succinate - CoQ reductase or succinate dehydrogenase) transfers electrons from succinate to coenzyme Q.

iii) Complex III (CoQ - cytochrome C reductase), transfers electron from CoQ to cytochrome C.

iv) Complex IV (cytochrome C oxidase) transfers electrons from cytochrome C to 02

cytochrome C to 02.

## 271. Which of the following is not true regarding ETC?

a) Occurs in mitochondria

b) Generates ATP

c) No role of inorganic phosphate

d) Involves transport of reducing equivalent

Correct Answer - C

Ans. is 'c' i.e., No role of inorganic phosphate

- Inorganic phosphate (Pi) is required in ETC to generate ATP.

  ADP+pi --> ATP
- ETC occurs in mitochondria and involves transfer of reducing equivalent to generate ATP

## 272. Maximum energy is liberated by hydrolysis of ?

a) Creatine phosphate

b) ATP

c) Phosphoenol pyruvate

d) Glucose-6-phosphate

Correct Answer - C

**Ans . C. Phosphoenol pyruvate**

- A compound that liberates 7 Kcal/n:ol or more on hydrolysis is called high energy compound, or a compound that on hydrolysis undergoes a large (. 7 kcal/mol) decrease in free energy (AG) under standard condition is called high energy compound, i.e., AG - 7 Kcal/mol.

## 273. Which of the following is an aldose sugar?

a) Ribulose

b) Fructose

c) Glyceraldehyde

d) All of the above

Correct Answer - C

**Ans. C. Glyceraldehyde**

| Sugar | Number of carbon Atoms | Aldoses | Ketoses |
|---|---|---|---|
| Trioses | 3 | Glyceraldehyde | Dihydroxyacetone |
| Tetroses | 4 | Erythrose | Erythrulose |
| Pentoses | 5 | Ribose,Xylose | Ribulose,Xylulose |
| Hexoses | 6 | Glucose,Galactose,Mannose | Fructose |
| Heptoses | 7 | Glucoheptose | Sdoheptulose |

**274.**

## Which of the enzyme of glycolysis is a part ofgluconeogenesis ?

a) Pyruvate kinase

b) PFK

c) Hexokinase

d) Phosphoglycerate kinase

Correct Answer - D
Ans. is 'd' i.e., Phosphoglycerate kinase

- Seven of the reactions of glycolysis are reversible and are used in the synthesis of glucose by gluconeogenesis. Thus, seven enzymes are common to both glycolysis and gluconeogenesis: (i) Phosphohexose isomerase; (ii) Aldolase; (iii) Phosphotriose isomerase, (iv) Glyceraldehyde 3-phosphate dehydrogenase; (v) Phosphoglycerate kinase; (vi) Phosphoglycerate mutase; (vii) Enolase.
- Three reactions of glycolysis are irreversible which are circumvented in gluconeogenesis by four reactions. So, enzymes at these steps are different in glycolysis and gluconeogenesis.

| Reactions | Enzyme in glycolysis | Enzyme in gluconeogenesis |
|---|---|---|
| Glucose – Glucose-6-P | Hexokinase/glucokinase | Glucose-6-phosphatase |
| Fructose-6-P – Fructose- I ,6-BP | Phosphofructokinase | Fructose-1-6-bisphosphatase |
| Phosphoenolpyruvate – Pyruvate | Pyruvate kinase | Pyruvate carboxylase PEP carboxykinase |

## 275. Number of ATP produced by RBC when Glycolysis occurs through Rapoport Leubering pathway-

a) 2

b) 6

c) 8

d) 0

Correct Answer - D
**Ans. 'D' 0**
Net number of ATPs produced from 1 mol of Glucose by

- Anaerobic Glycolysis- 2 ATPs
- Aerobic Glycolysis - 7 ATPs
- Aerobic oxidation- 32 ATPs
- Rapaport-LeuberingCycle- Zero

## 276. Number of ATP molecules and NADH formed in each cycle of glycolysis ?

a) 4 ATP, 2 NADH

b) 2 ATP, 2 NADH

c) 4 ATP, 4 NADH

d) 2 ATP, 4 NADH

Correct Answer - A

**Ans. is 'a' i.e., 4 ATP, 2 NADH**

**Enegetics of glvcolysis**

During glycolysis 2 ATP are utilized and 4 ATP are produced at substrate level. 2 reducing equalents NADH' are produced and reoxidized by electron transport chain, to generata 5 ATP molecules (2.5 ATP per NADH' molecule). Thus total 9 ATP molecules are produced and 2 are utilized, i.e., There is net gain of 7 ATP molecules in aerobic glycolysis.

In anaerobic conditions, the reoxidation of NADH by electron transport chain is prevented and NADH gets reoxidized by conversion of pyruvate to lactate by lactate dehydrogenase. Thus, in anaerobic glycolysis only 4 ATP are produced at substrate level. Therefore, there is net gain of 2 ATP molecules in anaerobic glycolysis.

Note : - Previous calculations were made assuming that NADH produces 3 ATPs and FADH2 generates 2 ATPs. This will amount to a net generation of 8ATPs per glucose molecule during glycolysis. Recent experiments show that these old values are overestimates and NADH produces 2.5 ATPs and FADH2 produces 1.5 ATPs. Thus, net generation is only 7ATPs during glycolysis.

## 277. Which of the following enzyme does not catalyzes irreversible step in glycolysis ?

a) Hexokinase

b) Phosphoglycerate kinase

c) Pyruvate kinase

d) Phosphofructokinase

Correct Answer - B
Ans. is 'b' i.e., Phosphoglycorate kinase
Glycolysis is regulated at 3 steps which are irreversible.
These reactions are catalyzed by following key enzymes :?
1) Hexokinase and glucokinase
2) Phosphofructokinase - I
3) Pyruvate kinase.

## 278. UDP glucose is not used in ?

a) Uronic acid pathway

b) Glycogen synthesis

c) Galactose metabolism

d) HMP shunt

Correct Answer - D
**Ans. is 'd' i.e., HMP shunt**
UDP-glucose is derived from glucose-6-phosphate via glucose-l-phosphate.
The major fate of UDP-glucose is the synthesis of glycogen.
Other uses of UDP-glucose are -
1. In uronic acid (glucoronic acid) cycle to generate UDP glucuronate.
2. Galactose metabolism
3. Glycosylation of proteins, lipids and proteoglycans.

## 279. Source of energy in Kreb's cycle is -

a) NAD

b) NADP

c) NADPH

d) NADH

Correct Answer - D
**Ans.'D' NADH**
**Energetics of  TCA cycles (Kreb's cycle)**

- Alpha-ketoglutarate is oxidatively decarboxylated to form succinyl CoA by the enzyme alpha-ketoglutarate dehydrogenase.
- The NADH thus generated enters into ETC to generate ATPs.
- Another molecule of $CO_2$ is removed in this step.
- This is the irreversible step in the whole reaction cycle.

## 280. Number of ATP generated in one TCA cycle ?

a) 2

b) 8

c) 10

d) 11

Correct Answer - C
Ans. is 'c' i.e., 10

- In a single TCA cycle 10 molecules of ATP are produced (12 molecules according to older calculations).
- One turn of the TCA cycle, starting with acetyl CoA produces 10 ATPs. When the starting molecule is pyruvate, the oxidative decarboxylation of pyruvate, the oxidative decarboxylation of pyruvate yields 2.5 ATPs and therefore, 12.5 ATPs are produced when starting compound is pyruvate. Since, two molecules of pyruvate enter the TCA cycle when glucose is metabolized (glycolysis produces 2 molecules of pyruvate), the number of ATPs is doubled. Therefore, 25 ATP molecules, per glucose molecule, are produced when pyruvate enters the TCA cycle.
- Note : Previously calculations were made assuming that NADH produces 3 ATPs and FADH generates 2 ATPs. This will amount a net generation of 30 ATP molecules in TCA per molecule glucose and total 38 molecules from starting. Recent experiments show that these values are overestimates and NADH produces 2.5 ATPs and FADH produces 1.5 ATPs. Therefore, net generation during TCA is 25 ATPs and complete oxidation of glucose through glycolysis plus citric acid cycle yield a net 32 ATPs.
- Energy yield (number of ATP generated) per molecule of glucose

when it is completely oxidized through glycolysis plus citric acid cycle, under aerobic conditions, is as follows :-

## 281. Coenzyme used in Kreb's cycle ?

a) NAD

b) NADP

c) NADPH

d) NADH

Correct Answer - A

Niacin is used as coenzyme nicotinamide adenine dinucleotide (NAD') for transfer of hydrogen.

## 282. Total number of dehydrogenases Krebs cycle ?

a) 3

b) 2

c) 4

d) 5

Correct Answer - C
Ans. is 'c' i.e., **4**

## 283. In citric acid cycle, NADH is produced by-

a) Succinate thiokinase

b) Succinate dehydrogenase

c) Isocitrate dehydrogenase

d) Fumarase

Correct Answer - C

**Ans 'C' Fumarase**

*NADH is produced and $CO_2$ is liberated at 3 steps :*

i) Conversion of isocitrate to a-ketoglutarate by isocitrate dehydrogenase

ii) Conversion of alpha-ketoglutarate to succinyl CoA by alpha-ketoglutarate dehydrogenase

iii) Conversion of L-malate to oxaloacetate by malate dehydrogenase.

## 284. Pyruvate dehydrogenase contains all, except -

a) NAD

b) FAD

c) Biotin

d) CoA

Correct Answer - C

*PDH complex is made up of three enzymes and requires five coenzymes.*

**The enzymes are :**

i) $E_1$ : Pyruvate dehydrogenase or pyruvate decarboxylase

ii) $E_2$ : Dihydrolipoyl transacetylase

iii) $E_3$ : Dihydrolipoyl dehydrogenase.

The coenzyme required are thiamine pyrophosphate (APP), lipoic acid, FAD, NAD, and CoA.

## 285. Specific inhibitor of succinate dehydrogenase?

a) Fluoroacetate

b) Arsenite

c) Malonate

d) Fluoride

Correct Answer - C
**Ans. C. Malonate**
Inhibition of the enzyme succinate dehydrogenase by malonate illustrates competitive inhibition by a substrate analog.
Succinate dehydrogenase catalyzes the removal of one hydrogen atom from each of the two methylene carbons of succinate.

## 286. Which is not a common enzyme for glycolysis and gluconeogenesis?

a) Aldolase

b) Glucose-6-phosphatase

c) Phosphoglycerate mutase

d) Phosphoglycerate kinase

Correct Answer - B

Seven of the reactions of glycolysis are reversible and are used in the synthesis of glucose by gluconeogenesis.

**Thus, seven enzymes are common to both glycolysis and gluconeogenesis :**

1. Phosphohexose isomerase;
2. Aldolase;
3. Phosphotriose isomerase,
4. Glyceraldehyde 3-phosphate dehydrogenase;
5. Phosphoglycerate kinase;
6. Phosphoglycerate mutase;
7. Enolase.

Three reactions of glycolysis are irreversible which are circumvented in gluconeogenesis by four reactions. So, enzymes at these steps are different in glycolysis and gluconeogenesis.

## 287. Which is not a step of gluconeogenesis?

a) Conversion of glucose-6-phosphate to glucose

b) Carboxylation of pyruvate

c) Conversion of oxaloacetate to phosphoenolpyruvate

d) Conversion of phosphoenolpyruvate to pyruvate

Correct Answer - D

**Ans.' D' Conversion of phosphoenolpyruvate to pyruvate**

Conversion of phosphoenolpyruvate to pyruvate is a step of glycolysis (not of gluconeogenesis).

**Reaction in gluconeogenesis**

Seven reactions of glycolysis are reversible and therefore are used with the same enzyme in the synthesis of glucose by gluconeogenesis. However, three of the reactions of glycolysis are irreversible and must be circumvented by four special reactions that are unique to gluconeogenesis and catalyzed by (I) Pyruvate carboxylase, (ii) Phosphoenolpyruvate carboxykinase, iii) fructose-I,6-bisphosphatase, (iv) Glucose-6-phosphatase.

All three irreversible steps of glycolysis should be bypassed for gluconeogenesis to occur. These three bypass steps are circumvented by four special reactions.

A) First bypass (conversion of pyruvate into phosphoenolpyruvate):- Conversion of pyruvate into phosphoenolpyruvate takes place through two reactions:?

i) Carboxylation of pyruvate: - First, pyruvate enters the mitochondria and is converted into oxaloacetate by pyruvate carboxylase. Pyruvate carboxylase is a mitochondrial enzyme, therefore this reaction occurs in mitochondria only.

ii) Conversion of oxaloacetate to phosphoenolpyruvate:

- Oxaloacetate produced in the mitochondria cannot cross the membrane. It is first reduced to malate, which then moves across the mitochondrial membrane into the cytosol. Malate is, then, reoxidized to oxaloacetate in the cytosol. Oxaloacetate is converted to phosphoenolpyruvate by phosphoenolpyruvate (PEP) carboxykinase.

B) Second bypass: - Conversion of fructose-1,6-bisphosphate into fructose-6-phosphate is catalyzed by fructose-1,6-bisphosphatase. Its presence determines whether tissue is capable of synthesizing glucose (gluconeogenesis) or glycogen (gluconeogenesis) not only from pyruvate but also from triose phosphate. It is present in the liver, kidney, and skeletal muscle, but is probably absent from heart and smooth muscle.

C) Third bypass: - Conversion of glucose-6-phosphate to glucose is catalyzed by glucose-6-phosphatase.

## 288. Regulating enzymes in Gluconeogenesis are all, except

a) Pyruvate carboxylase

b) PEP carboxykinase

c) PFK-1

d) Glucose-6-phosphatase

Correct Answer - C
**Ans. is. C. PFK-1**

## 289. Which of the following step is specific for gluconeogenesis

a) Pyrovate to acetyl CoA

b) Oxaloacetate to citrate

c) Oxaloacetate to PEP

d) Oxaloacetate to PEP

Correct Answer - C
Ans. is 'c' i.e., Oxaloacetate to PEP

## 290. Tyrosine enters gluconeogenesis by forming which substrate

a) Succinyl CoA

b) Alpha-ketoglutarate

c) Fumarate

d) Citrate

Correct Answer - C
**Ans. 'C' Fumarate**
TCA cycle intermediates are the substrate for gluconeogenesis. Gluconeogenic amino acids enter the TCA cycle after their transamination into various intermediates of the TCA cycle:?
Histidine, proline, glutamine and arginine are converted to glutamate which is then transaminated to α-ketoglutarate.
Isoleucine, methionine and valine enter by conversion into succinyl CoA. Propionate (a short chain fatty acid) also enter at this level.
Tyrosine, and phenylalanine enter by conversion into fumarate.
Tryptophan is converted to alanine which is then transaminated to pyruvate.
Hydroxyproline, serine, cysteine, threonine and glycine enter by conversion into pyruvate.

## 291. Fumarate of TCA is derived from transmination of which amino acid

a) Phenylalanine

b) Methionine

c) Valine

d) Glutamine

Correct Answer - A
**Ans. is. A. Phenylalanine**

## 292. Which of the following metabolic pathway in carbohydrate metabolism is required for synthesis of nucleic acids?

a) Gluconeogenesis

b) Glycolysis

c) HMP shunt

d) Glycogenesis

Correct Answer - C
**Ans. 'C' HMP Shunt.**
HMP is an alternative route for the oxidation of glucose (beside glycolysis). It is also called a *"pentose phosphate pathway", "Dickens - Horecker pathway", "Shunt pathway"* or *"phosphogluconate oxidative pathway"*
Metabolic Role of NADPH formed by HMP Shunt Pathway
1. Required for reductive biosyntheses, such as fatty acid, cholesterol, and steroids.
2. Free radical scavenging
3. RBC membrane integrity
4. Prevention of formation of meth-hemoglobin
5. Detoxification
6. Preserving transparency of the lens of the eye
7. Bactericidal activity of macrophages
8. Production of ribose and deoxyribose for DNA and RNA synthesis.

## 293. Type VI glycogen storage disease is due to the deficiency of –

a) Muscle phosphorylase

b) Glucose-6-phosphatase

c) Liver phosphorylase

d) Branching enzyme

Correct Answer - C
Type VI glycogen is also called Her's disease and it is caused by enzyme defect liver phosphorylase.

Clinical features are hepatomegaly, accumulation of glycogen in the liver and mild hypoglycemia.

## 294. Pyruvate can be a substrate for

a) Fatty acid synthesis

b) TCA cycle

c) Cholesterol synthesis

d) All of the above

Correct Answer - D
**Ans. is 'd' i.e., All of the above**
**Pyruvate**
a It is a degradation product of glucose (glycolysis) and glycogenic aminoacids. It can be converted to glucose (gluconeogenesis through oxaloacetate) and acetyl CoA (therefore all biosynthetic products which arise from acetyl CoA)

## 295. Glucose is converted to sorbitol by ?

a) Aldolase B

b) Aldose reductase

c) Sorbitol dehydrogenase

d) All of these

Correct Answer - B
Ans. is 'b' i.e., Aldose reductase

## 296. Lactose intolerance is due to ?

a) Deficiency of Galactokinase

b) Deficiency of Uridyl transferase

c) Deficiency of Lactase

d) Deficiency of Enteropeptidase

Correct Answer - C

**Ans. is 'c' i.e., Deficiency of Lactase**

**Lactose intolerance**

- It occurs due to deficiency of lactase, the most important member of β-galactosidase enzymatic class.
- Lactase hydrolyses lactose into glucose and galactose in the small intestine.
- Lactose is present in milk.
- Therefore, deficiency of lactase, (β-galactosidase) results in intolerance to milk and other dairy products.
- Clinical features are bloating, diarrhea, failure to thrive, abdominal distension and abdominal cramp.

## 297. Glucagon stimulates

a) Gluconeogenesis

b) Glycogenesis

c) Fatty acid synthesis

d) Glycolysis

Correct Answer - A

**Ans. 'A' Gluconeogenesis.**

Glucagon is a polypeptide hormone that is secreted by the A cells of the islets of Langerhans of the pancreas. It acts by increasing cAMP.

1) Glucagon stimulates glycogenolysis in the liver but not in muscle. Breakdown of glycogen yields glucose.

2) Glucagon stimulates the production of glucose from amino acids (gluconeogenesis). Both glycogenolysis and gluconeogenesis tend to raise plasma glucose levels.

3) Glucagon stimulates lipolysis. Breakdown of lipids yields free fatty acids, which may be oxidized completely to carbon dioxide, or incompletely to form ketone bodies.

## 298. Immediate energy supply for muscle contraction ?

a) GTP

b) ATP

c) Creatine phosphate

d) Fatty acid

Correct Answer - C

The immediate source of energy for all muscle contraction *is* ATP, followed immediately by creatine phosphate.

- The immediate source of energy for **all** muscle contraction is ATP, followed immediately by creatine phosphate.
- In sternous exercise ATP store is sufficient only for 1-2 seconds and creatine phosphate for another 5-7 seconds.
- Thus, energy rich phosphagen stores (ATP and creatine phosphate) permit severe muscle contraction for 8-10 seconds only.
- After this, energy is obtained from the metabolism of stored glycogen or from circulating glucose and free fatty acids, depending upon the availability of oxygen.

Energy source during in exercise can be summarized by :-

*i) Short burst of intense activity (e.g., 100 meter sprint or weight lifting) :-* All energy comes from ATP and creatine phosphate. Breakdown of these compound is an anaerobic processes.

*ii) Little longer intense exercise (e.g., 200 meter sprint* or *100 meter swim) :-* Besides ATP and creatine phosphate, glycogen is metabolised by anerobic glycolytic pathways to provide a ready source of energy. So, muscle work is anaerobic.

*iii) Longer duration exercise (e.g., jogging, marathan run) :* - The

muscle work is aerobic and energy comes from aerobic utilization of *glucose and free fatty acids.* More glucose is utilized at the initial stage, but as the exercise *is* prolonged, free fatty acids become the predominant fuel.

## 299. Main source of energy in 1 min is ?

a) Glycogen

b) FFA

c) Phosphates

d) Glucose

Correct Answer - A

**Source of energy for muscular activity**

The immediate source of energy for all muscle contractions is ATP, followed immediately by creatine phosphate.

In strenuous exercise, the ATP store is sufficient only for 1-2 seconds and creatine phosphate for another 5-7 seconds.

Thus, energy-rich phosphagen stores (ATP and creatine phosphate) permit severe muscle contraction for 8-10 seconds only.

After this, energy is obtained from the metabolism of stored glycogen or from circulating glucose and free fatty acids, depending upon the availability of oxygen.

Energy source during in exercise can be summarized by : -

*i) The short burst of intense activity (e.g., 100-meter sprint or weight lifting) :* - All energy comes from ATP and creatine phosphate. The breakdown of these compounds is anaerobic processes.

*ii) Little longer intense exercise (e.g., 200-meter sprint or 100-meter swim):*- Besides ATP and creatine phosphate, glycogen is metabolized by anaerobic glycolytic pathways to provide a ready source of energy. So, muscle work is anaerobic.

*iii) Longer duration exercise (e.g., jogging, marathon run):* - The muscle work is aerobic and energy comes from aerobic utilization of glucose *and free fatty acids.* More glucose is utilized at the initial stage, but as the exercise is prolonged, free fatty acids become the

predominant fuel.

## 300. Which of the following is increased in lipoprotein lipase deficiency?

a) VLDL

b) LDL

c) HDL

d) Chylomicrons

Correct Answer - D
Type 1 hyperlipoproteinemias

- Lipoprotein fraction elevated- Chylomicrons
- Metabolic defect- Lipoprotein lipase or Apo CII deficiency.
- Features- Eruptive xanthoma, hepatomegaly, Pain abdomen.
- Management- Restriction of fat intake, supplementation with MCT

## 301. Major source of energy for brain in fasting/ starvation ?

a) Glucose

b) Glycogen

c) Fatty acids

d) Ketone bodies

Correct Answer - D
There is no stored fuel in the brain, but it utilized 60% of total energy under resting conditions.
Glucose is virtually the sole fuel for the brain, except in prolonged starving when ketone bodies are the major source.
*Fatty acids do not serve as fuel for the brain,* because they are bound to albumin in plasma; hence cannot cross the blood-brain barrier.

## 302. Defect in type II hyperlipidemia

a) Apo-E

b) Lipoprotein lipase

c) LDL receptor

d) None

Correct Answer - C
Also called Familial hypercholesterolemia.
Type II A
(Primary familial hypercholesterolemia)
There is an elevation of LDL. Patients seldom survive in the second decade of life due to ischemic heart disease. The cause is the LDL receptor defect.
Receptor deficiency in the liver and peripheral tissues will result in the elevation of LDL levels in plasma, leading to hypercholesterolemia. The LDL receptor defect may be due to the following reasons:

1. LDL receptor deficiency.
2. Defective binding of B-100 to the receptor.
3. The receptor-LDL complex is not internalized.

Secondary type II hyperlipoproteinemia is seen in hypothyroidism, diabetes mellitus, nephrotic syndrome, and cholestasis.

## 303. Rate limiting step in fatty acid synthesis is ?

a) Production of acetyl CoA

b) Production of oxaloacetate

c) Production of malonyl-CoA

d) Production of citrate

Correct Answer - C

Production of malonyl-CoA is the initial and *rate-limiting step* in the fatty acid synthesis.

Acetyl-CoA needs to be converted to the activated form, which will serve as the donor of carbon units to the growing fatty acid chain.

Malonyl-CoA, a 3-carbon compound is such an activated form. It is produced by carboxylation of acetyl-CoA, a reaction catalyzed by acetyl-CoA carboxylase.

Acetyl-CoA carboxylase requires biotin as a cofactor. The reaction *also requires* $HCO_3^-$ *and ATP*

The reaction takes place in two steps:

(i) Carboxylation of biotin involving $HCO_3$ and ATP.

(ii) transfer of the carboxyl group to acetyl-CoA to form malonyl-CoA.

**304.** **Which of the following is the rate limiting step in cholesterol synthesis?**

a) HMG CoA synthase

b) HMG CoA reductase

c) Thiokinase

d) Mevalonate kinase

Correct Answer - B

Initially in cholesterol synthesis, two molecules of acetyl-CoA condense to form acetoacetyl-CoA catalyzed by cytosolic **thiolase.**

*Acetoacetyl-CoA condenses with a further molecule of acetyl-CoA catalyzed by* ***HMG-CoA synthase*** *to form HMG-CoA, which is reduced to* ***mevalonate*** *by NADPH in a reaction catalyzed by* ***HMG-CoA reductase****.*

*This last step is the principal regulatory step in the pathway of cholesterol synthesis* and is the site of action of the most effective class of cholesterol-lowering drugs, the statins, which are HMG-CoA reductase inhibitors.

**Ref:** Botham K.M., Mayes P.A. (2011). Chapter 26. Cholesterol Synthesis, Transport, & Excretion. In D.A. Bender, K.M. Botham, P.A. Weil, P.J. Kennelly, R.K. Murray, V.W. Rodwell (Eds), *Harper's Illustrated Biochemistry*, 29e.

## 305. Mineral required for cholesterol biosynthesis ?

a) Fe

b) Mn

c) Mg

d) Cu

Correct Answer - C

Mg is required in stage 2 of cholesterol synthesis.

**Biosynthesis (De Novo Synthesis) of cholesterol**

- The liver *is the major site for cholesterol biosynthesis.* Some cholesterol is also synthesized in the intestine adrenal cortex, gonads and skin. The *microsomal (smooth endoplasmic reticulum) and cytosol fraction of cell are responsible for fir cholesterol synthesis; However, most of the reactions in synthesis occur in the cytosol.*
- Cholesterol is a C-27 compound. *All 27-carbon atoms of cholesterol are derived from a single precursor, i.e. acetyl-CoA (activated acetate).*
- The first two molecules of acetyl-CoA condense to form acetoacetyl-CoA. Next, the third molecule of acetyl- CoA condenses with acetoacetyl-CoA to form 3-hydroxy-3-methylglutaryl-CoA (HMG-CoA). Then HMG-CoA is converted to mevalonate by HMG-CoA reductase, the key regulatory enzyme of cholesterol synthesis.

## 306. Lipoprotein involved in reverse cholesterol transport?

a) LDL

b) VLDL

c) IDL

d) HDL

Correct Answer - D

The HDL particles are referred to as *scavengers* because their primary role is to remove free (unesterified) cholesterol from the extrahepatic tissues.

HDL particles transport cholesterol from extrahepatic tissues to the liver (i.e. *reverse cholesterol transport)* which is then excreted through bile.

**Reverse cholesterol transport**

All nucleated cells in different tissues synthesize cholesterol, but the excretion of cholesterol is mainly by the liver in the bile or by enterocytes in the gut lumen. *So, cholesterol must be transported from peripheral tissue to the liver for excretion.* This is *facilitated by HDL* and is called *reverse cholesterol transport* because it transports the cholesterol in reverse direction to that is transported from the liver to peripheral tissues through the VLDL → LDL cycle.

**Process**

*HDL is synthesized in the liver and small intestine.* Nascent HDL contains phospholipids and unesterified cholesterol and Apo-A, C, E. This nascent HDL is secreted into circulation where it acquires additional unesterified cholesterol from peripheral tissues. Within the HDL particle, the cholesterol is esterified by *lecithin - cholesterol acetyltransferase (LCAT) to* form cholesteryl ester and additional

lipid is transported to HDL from VLDL and chylomicrons. Apo-$A_1$ activates LCAT.

## 307. Lipoprotein associated with carrying cholesterol from peripheral tissues to liver is ?

a) HDL

b) LDL

c) VLDL

d) IDL

Correct Answer - A
The total body cholesterol content varies from 130-150 grams.
LDL (low-density lipoprotein) transports cholesterol from the liver to the peripheral tissues and HDL (high-density lipoprotein) transports cholesterol from tissues to the liver.
Cells of extrahepatic tissues take up cholesterol from LDL.

## 308. Enzyme deficient in gangliosidoses ?

a) β-glucuronidase

b) Iduronidase

c) β-galactosidase

d) Hyaluronidase

Correct Answer - C
**Ans. 'C' β-galactosidase**
Generalized gangliosidoses is a lipid storage disorder.

- Enzyme defect- β-galactosidase
- Lipid accumulates- Ganglioside (GM1)
- Clinical features- Mental retardation, hepatomegaly, skeletal deformities. Foam cells in the bone marrow. Cherry red spot in the retina.

## 309. Hunter syndrome is due to deficiency of

a) Beta galactosidase

b) Sphingomyelinase

c) Iduronate Sulfatase

d) Hyaluronidase

Correct Answer - C
Ans. is 'c' i.e., Iduronate Sulfatase

## 310. Tay-Sach disease is due to deficiency of

a) Hexosaminidase A

b) Hexosaminidase B

c) Sphingomyelinase

d) α-galactosidase

Correct Answer - A
**Ans. is. A. Hexosaminidase A**

## 311. Alcohol is metabolized by ?

a) Alcohol dehydrogenase

b) MEOS

c) Catalase

d) All of the above

Correct Answer - D

Ethyl alcohol (ethanol) is readily absorbed from GIT and degraded by oxidation (oxidative process).
Liver is the major site for ethanol oxidation.
At least three enzyme systems are capable of ethanol oxidation :-
*i)* *Alcohol dehydrogenase (ADH)* → Major pathway
*ii)* *Microsomal ethanol oxidising system (MEOS) :* It involves cytochrome P450.
*iii)* *Catalase of peroxisomes.*
The product of all three oxidation pathways is acetaldehyde, which is rapidly oxidized to acetate by aldehyde dehydrogenase (ALDH).

## 312. Oxidation of very long chain fatty acids takes place in ?

a) Cytosol

b) Mitochondria

c) Ribosomes

d) Peroxisomes

Correct Answer - D

- A modified form of β-oxidation is found in peroxisomes and leads to the breakdown of very-long-chain fatty acids (eg, C20, C22) with the formation of acetyl-CoA and $H_2O_2$, which is broken down by catalase.
- This system is not linked directly to phosphorylation and the generation of ATP, and also does not attack shorter-chain fatty acids.
- The peroxisomal enzymes are induced by high-fat diets and in some species by hypolipidemic drugs such as clofibrate.
- Another role of peroxisomal β-oxidation is to shorten the side chain of cholesterol in bile acid formation

## 313. which of the following occurs only in mitochondria

a) ECT

b) Ketogenesis

c) Urea cycle

d) Steroid synthesis

Correct Answer - C

**Ans. D. Urea Cycle**

- **Ketogenesis occurs primarily in the mitochondria of liver cells. Fatty acids are brought into the mitochondria via carnitine palmitoyltransferase (CPT-1) and then broken down into acetyl CoA via beta-oxidation**
- **In eukaryotes, an important electron transport chain is found in the inner mitochondrial membrane where it serves as the site of oxidative phosphorylation through the action of ATP synthase.**
- **Mitochondria are essential sites for steroid hormone biosynthesis. Mitochondria in the steroidogenic cells of the adrenal, gonad, placenta and brain contain the cholesterol side-chain cleavage enzyme, P450scc, and its two electron-transfer partners, ferredoxin reductase and ferredoxin. This enzyme system converts cholesterol to pregnenolone and determines net steroidogenic capacity, so that it serves as the chronic regulator of steroidogenesis.**
- **urea is produced through a series of reactions occurring in the *cytosol and mitochondrial matrix of liver cells both***

## 314. Which of the following is not a glycerosphingolipid?

a) Lecithin

b) Cardiolipin

c) Plasmalogens

d) Sphingomyelin

Correct Answer - D

**Phospholipids are :**

i. Glycerophospholipids (glycerol containing) :- *Phosphatidylcholine (lecithin),* phosphatidylethanolamine (cephaline), phosphatidylserine, phosphatidylinositol, *plasmalogens,* lysophospholipids, *cardiolipin.*

i. Sphingophospholipids (sphingosine containing) :- *Sphingomyelin*

## 315. Highest mobility on electrophoresis

a) HDL

b) VLDL

c) LDL

d) Chylomicrons

Correct Answer - A
As in lipoprotein **electrophoresis**, **HDL** shows the **highest mobility** followed by VLDL, IDL, and LDL.
Chylomicrons migrate according to their net-charge between **HDL** and VLDL because isotachophoresis has negligible molecular sieve effects.

**316. In argininosuccinase deficiency, what should be supplemented to continue the urea cycle ?**

a) Aspartate

b) Arginine

c) Citrullin

d) Argininosuccinate

Correct Answer - B
Argininosuccinase (argininosuccinate lyase) catalyzes the cleavage of argininosuccinate into arginine and fumarate. Thus, in argininosuccinase deficiency, *arginine cannot be produced.* Supplementation with arginine base helps replenish this amino acid.

## 317. Immediate precursor of creatine

a) Carbamoyl phosphate

b) Arginosuccinate

c) Guanidoacetate

d) Citrulline

Correct Answer - C
**Ans. 'C' Guanidoacetate**
Creatine and creatinine are not amino acids, but specialized products of amino acids.
Creatine is synthesized from glycine, arginine, and methionine.
The synthesis starts with the formation of guanidinoacetate from glycine and arginine in the kidney.
Further reactions take place in the liver and muscle.

**318.** **Which one of the following can be a homologous substitution for isoleucine in a protein sequence?**

a) Methionine

b) Aspartic acid

c) Valine

d) Arginine

Correct Answer - C

Isoleucine is one of the aminoacid with an aliphatic side chain.
Other aminoacids with an aliphatic side chain is glycine, alanine, valine and leucine.
Among the options provided, valine is the only aminoacid with an aliphatic side chain and so it can be a homologous substitution for isoleucine in a protein sequence.
**Ref:** Harper's Illustrated Biochemistry, 26th Edition, Chapter 3, Page 15; Human Gene Evolution By David N. Cooper, 1999, Page 299.

## 319. Bond involved in formation of primary structure of protein/polypeptide ?

a) Hydrogen

b) Peptide

c) Disulfide

d) a and b both

Correct Answer - D
**Ans: D. a and b both**
The primary structure is stabilized by a peptide bond, which is a type of covalent bond
**Bonds responsible for protein structure**
Two types of bonds stabilize protein structure : -
Covalent (strong):- Peptide bonds, Disulfide bond.
Non-covalent (weak):- Hydrogen bond, hydrophobic interactions, electrostatic (or ionic or salt) bond, Van der Waals interactions.

## 320. Urea is synthesized in all except

a) Liver

b) Brain

c) Kidney

d) Spleen

Correct Answer - D
Urea is synthesized in liver but small quantities (not significant) may be formed in brain and kidney also.
Ammonia is ultimately disposed of by formation of urea by "Kreb's Henseleit urea cycle" in the liver.
Urea cycle takes place *both in mitochondria and cytosol.*
First two reactions of urea cycle occur in the mitochondria, and remaining reactions occurs in cytosol

## 321. Rate limiting step in urea cycle is catalyzed by ?

a) Arginase

b) Argininosuccinase

c) Carbamoyl-phosphate synthase

d) Ornithine transcarbamylase

Correct Answer - C
**Ans. is 'c' i.e., Carbamoyl-phosphate synthase**
**Biosynthesis of urea occurs in five steps.**
1) Carbamoyl phosphate synthase-I (CPS-I), a *mitochondria!* enzyme, catalyzes the formation of carbamoyl phosphate by condensation of CO, and ammonia. Two molecules of ATP are required for the reaction. *CPS-I is the rate limiting enzyme of urea cycle.* It is an allosteric enzyme and allosterically activated by N-acetyl glutamate.
There is one cytosolic carbamyl phosphate synthase-II (CPS-II) which uses glutamine rather than ammonia as the nitrogen donor and functions in pyrimidine synthesis.
*2) Ornithine transcarbamoylase* catalyzes the formation of citrulline from carbamoyl phosphate and ornithine.
3) Arginosuccinate synthase catalyzes the formation of arginosuccinate from citrulline and aspartate. This reaction requires *I ATP, but 2 high energy phosphate* bonds are consumed as ATP is converted to AMP + PPi. The amino group of aspartate provides one of the two nitrogen atoms that appear in urea (The other one is provided by ammonia NH4).
4) Arginosuccinate lyase (arginosuccinase) catalyses the cleavage of arginosuccinate into arginine and fumarate. Fumarate enters in

TCA cycle.
5) Arginase catalyses the formation of urea from arginine by hydrolytic cleavage of arginine to yield urea and ornithine. Ornithine is thus regenerated and can enter mitochondria to initiate another round of the urea cycle.

## 322. Citrullinemia is due to deficiency of ?

a) Argininosuccinate lyase

b) Argininosuccinate synthase

c) Arginase

d) Ornithine transcarbamylase

Correct Answer - B
**Ans. is. B. Argininosuccinate synthase**

## 323. Amino acid carrying ammonia from muscle to liver?

a) Alanine

b) Glutamine

c) Arginine

d) Lysine

Correct Answer - A

**Ans. is 'a' i.e., Alanine.**

**DISPOSAL/DETOXIFICATION OF AMMONIA**

1. First line of Defense (Trapping of ammonia)

- Being highly toxic, ammonia should be eliminated or detoxified, as and when it is formed. Even very minute quantity of ammonia may produce toxicity in central nervous system.
- But, ammonia is always produced by almost all cells, including neurons.
- The intracellular ammonia is immediately trapped by glutamic acid to form glutamine, especially in brain cells .
- The glutamine is then transported to liver, where the reaction is reversed by the enzyme glutaminase .
- The ammonia thus generated is immediately detoxified into urea.
- Aspartic acid may also undergo similar reaction to form asparagine .

2. Transportation of Ammonia

- Inside the cells of almost all tissues, the transamination of amino acids produce glutamic acid.
- However, glutamate dehydrogenase is available only in the liver.
- Therefore, the final deamination and production of ammonia is taking place in the liver .
- Thus, glutamic acid acts as the link between amino groups of amino

acids and ammonia.

- The concentration of glutamic acid in blood is 10 times more than other amino acids.
- Glutamine is the transport forms of ammonia from brain and intestine to liver; while alanine is the transport form from muscle.

3. Final disposal

- The ammonia from all over the body thus reaches liver. It is then detoxified to urea by liver cells, and then excreted through kidneys.
- Urea is the end product of protein metabolism.

**Transport of alanine from muscle to liver (glucose-alanine cycle) has two functions :?**

- i) Providing substrate for gluconeogenesis
- ii) Transport of ammonia ($NH_4$-) to liver for urea synthesis.

## 324. Mousy odor of urine is seen in ?

a) Alkaptunuria

b) Phenylketonuria

c) Hartnup disease

d) Albinism

Correct Answer - B

## 325. Cabbage-like odour is seen in ?

a) Alkaptonuria

b) Phenylketonuria

c) Hartnup disease

d) Tyrosinemia

Correct Answer - D
**Ans. is. D. Tyrosinemia**

## 326. If urine sample darkens on standing: the most likely conditions is ?

a) Phenylketonuria

b) Alkaptonuria

c) Maple syrup disease

d) Tyrosinemia

Correct Answer - B
Ans. is 'b' i.e., Alkaptonuria
**Alkaptonuria**
It is due to deficiency of homogentisate oxidase. As a result homogentisic acid (homogentisate) is excreted execessively in urine. There arc three important characteristic features in alkaptonuria?
i) Urine becomes dark after being exposed to air. It is due spontaneous oxidation of homogentisate into *benzoquinone acetate,* which polymerse to form *black-brown pigment alkapton* which imparts a characteristic black-brown colour to urine.
ii) Alkapton deposition occurs in sclera, ear, nose, cheeks and intervertebral disc space. A condition called ochronosis. There may be calcification of intervertebral discs.
iii) Onchronosis arthritis affecting shoulder, hips, knee.
Benedict's test is strongly positive in urine and so is the ferric chloride *(FeC1 $_3$)test. Benedict's reagent* gives a greenish brown precipitate with brownish black supernatent. *Fehling's reagent (FeC1$_3$)* gives blue green colour.

## 327. Derivative of POMC

a) Norepinephrine

b) Dopamine

c) ACTH

d) Acetylcholine

Correct Answer - C

Pro-opiomelanocortin (POMC) comprises 285 amino acid residues (MW 31000) and serves as a precursor of many proteins/polypeptide.
**Derivatives of POMC are:-**
*i) Pituitary hormones: ACTH,* MSH
ii) β-lipotropic hormone (β-LPH)
iii) γ-lipotropic hormone (γ-LPH)
iv) β-endorphin
v) CLIP (corticotropin-like intermediate lobe peptide).

## 328. Cofactor for dopamine hydroxylase ?

a) Fe

b) Mg

c) Mn

d) Cu

Correct Answer - D
Dopamine 8-hydroxylase is a 'copper' containing monooxygenase that requires ascorbic acid and molecular oxygen.
It catalyzes the formation of norepinephrine.

## 329. Not an essential amino acid ?

a) Arginine

b) Histidine

c) Glutamate

d) Lysine

Correct Answer - C
**Ans 'C' Glutamate**
**Essential or Indispensable**
The amino acids may further be classified according to their essentiality for growth. They are

- Isoleucine
- Leucine
- Threonine
- Lysine
- Methionine
- Phenylalanine
- Tryptophan
- Valine

## 330. Nicotinic acid is derived from ?

a) Glutamine

b) Tryptophan

c) Glutathione

d) Phenylalanine

Correct Answer - B

**Ans. 'B' Tryptophan.**

**Nicotinic Acid Pathway of Tryptophan-**

- About 97% of molecules of tryptophan are metabolized in the major pathway. About 3% of molecules are diverted at the level of 3-hydroxy anthranilic acid, to form $NAD^+$.
- The enzyme, QPRT (quinolinate phosphoribosyltransferase) is the rate-limiting step.
- About 60 mg of tryptophan will be equivalent to 1 mg of nicotinic acid. The development of pellagra like symptoms in the maize eating population is due to tryptophan deficiency in maize.
- Hydroxy anthranilate production is dependent on pyridoxal phosphate. Hence in vitamin B6 deficiency, nicotinamide deficiency is also manifested.

## 331. Amino acids with extra $NH_2$ (amino group) in structure-

a) Aspartate

b) Glutamate

c) Histidine

d) Alanine

Correct Answer - C

**Ans. is. C. Histidine**

The amino acids will undergo alpha decarboxylation to form the corresponding amine.

Some important amines are produced from amino acids. For example,

- Histidine → Histamine + CO2
- Tyrosine → Tyramine + CO2
- Tryptophan → Tryptamine + CO2
- Lysine → Cadaverine + CO2
- Glutamic acid → Gamma-aminobutyric acid (GABA) + CO2

## 332. Neutral amino acid is ?

a) Aspartate

b) Arginine

c) Glycine

d) Histidine

Correct Answer - C
Ans. is 'c' i.e., Glycine

- Neutral amino acids
- Alanine Asparging
- Cysteine *Glycine* Glutamine Isoleucine
- Leucine Methionine
- Proline Phenylalanine
- Serine
- Threonine
- Tyrosine Tryptophan
- Valine

## 333. Which of the following amino acids is purely ketogenic?

a) Phenylalanine

b) Leucine

c) Proline

d) Tyrosine

Correct Answer - B
Ans:B.)Leucine
Amino acids:
**Ketogenic :**

- Leucine, Lysine

**Glucogenic:**

- Valine, Cysteine, Serine,Alanine, Histidine,Threonine, Arginine, Glycine, Glutamate, Proline/Hydroxy proline

**Both Glucogenic & Ketogenic :**

- Isoleucine, Tyrosine ,Tryptophan , Phenylalanine

## 334. Amino acid which is optically inert ?

a) Valine

b) Alanine

c) Glycine

d) Threonine

Correct Answer - C

**Ans. 'C' Glycine**

The a-carbon of amino acids has four different groups attached to it and so is a chiral or asymmetric carbon.

Hence, there are two possible enantiomers, L and D, i.e., mirror image with reference to α-carbon.

The chiral carbon is also responsible for optical activity and stereoisomerism.

The only exception is glycine, which is the *simplest amino acid.*

Glycine has no chiral carbon (chirality) because a-carbon of glycine does not have four different groups attached to it.

Therefore glycine does not have optical activity *or D and L forms (enantiomers).*

## 335. Alpha helix and Beta pleated sheet are examples of?

a) Primary

b) Secondary structure

c) Tertiary

d) Quaternary structure

Correct Answer - B

**Ans. 'B' Secondary structure**

**Structural organization of proteins**

Every protein has a unique three -dimensional structure, which is referred to as its *native conformation* and made up of only 20 different amino acids. Protein structure can be classified into four levels of the organization.

**1) Primary structures**

- **The linear sequence of amino acid residues and the location of disulfide bridges, if any, in a polypeptide chain constitute its primary structure.** In simple words, the *primary structure of proteins refers to the specific sequence of amino acids. The primary* structure is maintained by the **covalent 'peptide' bond.**

**2) Secondary structure**

- For stability of the primary structure, hydrogen bonding between the hydrogen of NH and oxygen of C = 0 groups of the polypeptide chain occurs, which gives rise to twisting, folding or bending of the primary structure. Thus, **regular folding and twisting of the polypeptide chain brought about by hydrogen bonding is called secondary structure.** Important types of secondary structures are **a-helix, beta-pleated sheet,** and beta**-bends.**

**3) Tertiary structure**

- The peptide chain, with its secondary structure, maybe further folded and twisted about itself forming **three-dimensional arrangement** of the polypeptide chain, i.e., *tertiary structure refers to the overall folding pattern of a polypeptide which forms the three-dimensional shape. The tertiary* **structure (three-dimensional shape) is maintained by weak non-covalent interactions** which include *hydrogen bonds, hydrophobic interactions, ionic bond (electrostatic bonds or salt bridges)* and Van-der wall forces. *Covalent linkage (disulfide bond)* also plays some (but minor) role.

**4) Quaternary structure**

- Many proteins are made up of *more than one polypeptide chain (polymers).* Each polypeptide chain is known as *protomer (or subunit).* The subunit is linked with each other by *non-covalent bonds.* The structure formed by the union of subunits is known as quaternary structure, i.e., the *spatial relation of subunits (peptide chains) with one another is called the quaternary structure.* Mainly three *non-covalent bonds* stabilize quaternary structure: *Hydrophobic, hydrogen* and *ionic (electrostatic).*
- Dimeric proteins contain two polypeptide chains. Homodimers contain two copies of the same polypeptide chain, while in a heterodimer the polypeptides differ.

## 336. Cystathionine lyase requires which cofactor ?

a) Thiamine

b) Riboflavin

c) Pyridoxine

d) Niacin

Correct Answer - C
**Ans. 'C' Pyridoxine**
Hydrolytic cleavage (hydrolysis) of cystathionine forms Homoserine plus cysteine.
This reaction is catalyzed by the enzyme cystathionine lyase (cystathionase), which requires cofactor pyridoxal phosphate (the active form of pyridoxine).

## 337. Taurine is made from ?

a) Glycine

b) Tyrosine

c) Cysteine

d) Phenylalanine

Correct Answer - C
Ans. is 'c' i.e., Cysteine
Taurine is synthesized from cysteine.

**338. If tyrosine level in blood is normal without external supplementation, deficiency of which of the following is ruled out ?**

a) Tryptophan

b) Phenylalanine

c) Histidine

d) Isoleucine

Correct Answer - B
**Ans. is 'b' i.e., Phenylalanine**
**Tyrosine is synthesized from phenylalanine.**
In phenylalanine deficiency or in disorders in which phenylalanine cannot be converted into tyrosine (phenylketonuria), tyrosine becomes an essential amino acid and should be supplemented from outside.

## 339. Nitrogen-9 of purine ring is provided by ?

a) Glycine

b) Aspartate

c) Glutamine

d) $CO_2$

Correct Answer - C

In de novo synthesis, purine ring is formed from variety of precursors is assembled on ribose-5-phosphate. Precursors for de novo synthesis are -

*i) Glycine provides $C_4$, $C_5$ and $N_7$*

*ii) Aspartate provides $N_1$*

*iii) Glutamine provides $N_3$ and $N_9$*

*iv) Tetrahydrofolate derivatives furnish $C_2$ and $C_8$*

*v) Carbon dioxide provides $C_6$*

## 340. First product of purine metabolism

a) Uric acid

b) Xanthine

c) P-alanine

d) $CO_2$

Correct Answer - B

- Humans catabolize purines to uric acid.
- But, first purines are catabolized to xanthine, which is further catabolized to purine.

## 341. Allantoin is the end product of metabolism of ?

a) Glycogen

b) Purine

c) Pyrimidine

d) Histidine

Correct Answer - B

In non-primate mammals, end product of purine metabolism is allantoin due to presence of enzyme uricase. Uricase convertes uric acid to allantoin.
Humans lack the enzyme uricase. Therefore, end product of purine catabolism in humans is uric acid.

## 342. First purine nucleotide, which is synthesized in purine biosynthesis ?

a) AMP

b) GMP

c) IMP

d) UMP

Correct Answer - C

The biosynthesis of purine begins with ribose-5-phosphate, derived from pentose phosphate pathway (PPP).
First intermediate formed in this pathway, 5-phosphoribosyl-pyrophosphate (PRPP), is also an intermediate in purine salvage pathway.

## 343. Salvage pathway of purine biosynthesis is important for ?

a) Liver

b) RBCs

c) Kidney

d) Lung

Correct Answer - B

**Purine nucleotide synthesis occurs by two pathways :**
1.De novo synthesis
2.Salvage pathway
Liver is the major site of purine nucleotide biosynthesis (de novo). Certain tissues cannot synthesize purine nucleotides by de novo patyway, e g. *brain, erythrocytes and polymorphonuclear leukocytes.* These are dependent on salvage pathway for synthesis of purine nucleotides by using exogenous purines, which are formed by degradation of purine nucleotides synthesized in liver.

## 344. Vitamin involved in decarboxylation ?

a) Biotin

b) Pyridoxine

c) Niacin

d) Thiamine

Correct Answer - B
**Ans. is. B. Pyridoxine**
Pyridoxal phosphate is a coenzyme for many enzymes involved in amino 1309 acid metabolism, especially transamination and decarboxylation.
It is also the cofactor of glycogen phosphorylase, where the phosphate group is catalytically important. In addition, it is important in steroid hormone action.
Pyridoxal phosphate removes the hormone-receptor complex from DNA binding, terminating the action of the hormones.

## 345. Vitamin C is required for ?

a) Posttranslational modification

b) Synthesis of epinephrine

c) Tyrosine metabolism

d) All of the above

Correct Answer - D

**Vitamin C (ascorbic acid)**
Ascorbic acid (Vitamin C) is also called antiscorbutic factor.
It is very *heat labile,* especially in basic medium.
Ascorbic acid itself is an active form.
Maximum amount of vitamin C is found in adrenal cortex.
Ascorbic acid functions as a reducing agent and scavanger of free radicals (antioxidant). Its major functions are :-
i) In collagen synthesis :- Vitamin C is required for post-translational modification by hydroxylation of proline and lysine residues converting them into hydroxyproline and hydroxylysine. Thus vitamin C is essential for the conversion of procollagen to collagen, which is rich in hydroxyproline and hydroxylysine. Through collagen synthesis, it plays a role in formation of matrix of bone, cartilage, dentine and connective tissue.
ii) Synthesis of norepinephrine from dopamine by dopamine-(3-monoxygenase (dopamine-13-hydroxylase) requires Vitamin C.
*iii) Carnitine synthesis*
*iv) Bile acid synthesis :-* 7-a-hydroxylase requires vitamin C.
*v) Absorption of iron* is stimulated by ascorbic acid by conversion of ferric to ferrous ions.
vi) During *adrenal steroid synthesis,* ascorbic acid is required during

hydroxylation reactions.
*vii) Tyrosine metabolism* - Oxidation of P-hydroxy-phenylpyruvate to homogentisate.
*viii) Folate metabolism* - Folic acid is converted to its active form tetrahydrofolate by help of Vitamin C.

## 346. Most important vitamin, which promotes wound healing ?

a) Vitamin C

b) Vitamin D

c) Vitamin A

d) Niacin

Correct Answer - A

- Vitamin C is required for collagen synthesis.
- Due to its important role in collagen synthesis, vitamin C is required for adequate wound healing.

## 347. Deficiency of which vitamin causes excretion of xantheurenic acid in urine ?

a) Folic acid

b) Pyridoxin

c) Niacin

d) Vitamin B12

Correct Answer - B
Ans. is 'b' i.e., Pyridoxin

## 348. FIGLU excretion test is used for assessment of deficiency of ?

a) Vitamin $B_{12}$

b) Niacin

c) Folic acid

d) Pyridoxin

Correct Answer - C
Ans. is 'c' i.e., Folic acid
**Assessment of folate deficiency**
Following tests arc used for assessment of folate deficiency.
*i) Blood level :-* Normal level in serum is about 2-20 nanogram/ml and about 200 micorgram/ml of packed cells.
ii) Histidine load test or FIGLU excretion test :- Histidine is normally metabolized to formimino glutamic acid (FIGLU) from which formimino group is removed by THF. Therefore in folate deficiency, FIGLU excretion is increased in urine.

## 349. Not a component of PCR ?

a) Primer

b) Taq polymerase

c) DNA Polymerase

d) Restriction enzyme

Correct Answer - D

**Steps in PCR**

PCR uses DNA polymerase to repetitively amlify targeted portion of DNA. Each cycle doubles the amout of DNA in the sample, leading to exponential increase with repeated cycles of amplification. Thus amplification after 'n' number of cycle in (2)". Twenty cycles provide an amplification of $10^6$ (million) and 30 cycles of 109 (billion).

PCR occurs in following steps -

*i) Isolation of target DNA sequence :-*

*ii) Primers construction:-*

*iii) Denaturation of DNA :-*

*iv) Annealing of primers to single stranded DNA :-*

*v) Chain extension:-*

Thus following are required in PCR :- Target double stranded DNA, two specific primers, a thermostable DNA polymerase (Taq polymerase), deoxyribonucleotides (dNTP).

## 350. Which is not a step of PCR ?

a) Annealing

b) Extension

c) Transformation

d) Denaturation

Correct Answer - C

**Ans. is 'c' i.e., Transformation *[Ref Lippincott' $_s$* 5thle p. *479-83; Harper 28$^{th}$/e p. 395]* Steps in PCR**

- Isolation of target DNA sequence→ Primer **construction** → **Denaturation** of DNA→ Annealing of primers to single stranded DNA→ **Chain extension.**

## 351. Northern blot is used to detect ?

a) Protein

b) Immunoglobulin

c) RNA

d) DNA

Correct Answer - C
Ans: C. RNA

- Visualization of a specific DNA or RNA fragment among the many thousand of contaminating molecules requires the convergence of number of techniques collectively termed the blot transfer.
- Southern blot → Detects DNA
- Northern blot → Detects RNA
- Western blot → Detects proteins (proteins are separated by electrophoresis, renatured and analysed for an interaction by hybridization with a specific labelled DNA probe).

## 352. Sex determining region is located on ?

a) Long arm of Y chromosome

b) Short arm of Y chromosome

c) Long arm of X chromosome

d) Short arm of X chromosome

Correct Answer - B
Product of SRY gene is sex-determining region Y protein.
This protein is involved in *male* sexual development.

## 353. Which of the following is a nucleoside?

a) Adenine

b) Uridine

c) Thymine

d) Guanine

Correct Answer - B
**Ans. is. B. Uridine**

## 354. RNA polymerase has which activity

a) Primase

b) Helicase

c) Ligase

d) Topoisomerase

Correct Answer - A

DNA synthesis cannot commence with deoxyribonucleotides because DNA polymerase cannot add a mononucleotide to another mononucleotide.

- Thus, DNA polymerase cannot initiate synthesis of complementary DNA synthesis strand of DNA on a totally single stranded template.
- For this, they require RNA primer, which is a short piece of RNA formed by enzyme primase (RNA polymerase) using DNA as a template.
- RNA primer is then extended by addition of deoxyribonucleotides.
- Later on, the ribonucleotides of the primer are replaced by deoxyribonucleotides.
- Primase is actually a DNA primase which has RNA polymerase activity. This DNA primase is also called DNA polymerase.

## 355. Number of structural gene in Lac operon

a) 3

b) 4

c) 5

d) 6

Correct Answer - A

**Lactose operone or Lac operon**

The lac operon is a region of DNA in the genome of E. coli that contains following genetic elements ?

i) Three structural genes :- These code for 3 proteins that are involved in catabolism of lactose. These genes are 'Z' gene (codes for P-galactosidase), 'Y' gene (codes for galactoside permease), and 'A' gene (codes for thiogalactoside transacetylase).

ii) Regulatory gene (lac i) It produces repressor protein.

iii) A promotor site (P) :- It is the binding site for RNA polymerase. It contains two specific regions ?

*a) CAP site* (Catabolite activator protein binding site).

b) RNA polymerase binding site

iv) An operator site (0) :- Repressor binds to this site and blocks transcription.

3 Structural genes are expressed only when '0' site is empty (repressor is not bound) and the CAP site is bound by a complex of cAMP and CAP (catabolite gene activator protein).

## 356. The enzyme involved in initiation of peptide chain synthesis-

a) Topoisomerase

b) Transformylase

c) RNA polymerase

d) Peptidyl transferase

Correct Answer - B

**Ans. 'B' Transformylase**

**Steps in eukaryotic translation (protein synthesis)**

There are three major steps, in protein synthesis (translation):- (i) Initiation, (ii) Elongation; and (iii) Termination.

- In prokaryotes and in mitochondria, the first amino acid methionine is modified by formylation, i.e. the initiator tRNA carries an N-formylated methionine. The formyl group is added by the enzyme transformylase (formyl-transferase).
- In Eukaryotes, the initiator tRNA carries a methionine that is not formylated.

## 357. Most common physiological form of DNA

a) A-form

b) B-form

c) Z-form

d) C-form

Correct Answer - B
DNA can exist in at least six forms, i.e. A, B, C, D, E and Z.
The B-form of DNA is the most common form of DNA and is right-handed helix.
It is the strandard DNA structure with 10 base pairs per turn.
Watson and Crick model describes the B-form of DNA.
Other forms of DNA are A-form (contains 11 base pairs per turn and is *right handed helix)* and Z-form (contains 12 base pairs per turn and is *left handed helix).*
Z-form is favored by alternating G-C sequences in alcohol and high salt solution; and is inhibited by alternating A-T sequnces (Note-B form has minimum base pairs per turn, i.e. 10).

## 358. Quarternary ammonium compound disinfectants are ?

a) Anionic

b) Cationic

c) Neutral

d) Gases

Correct Answer - B

Quaternary ammonium compounds are cationic detergents.
They have microcidal and viricidal activities.
They can be used for instrument disinfection and skin antisepsis.

## 359. AST/ALT > 2 occurs in deficiency of

a) Glucose-6-phosphotase

b) Branching enzyme

c) Acid maltase

d) Liver phosphorylase

Correct Answer - C

**Ans. is 'c' i.e., Acid maltase *[Ref Read below]***

- In liver diseases, ALT (alanine transaminase) is elevated more than AST (aspartate transaminase). So, in liver diseases ALT/ AST ratio is elevated.
- But, when AST is higher than ALT, a muscle, source of these enzymes should be considered.
- Among the given options, only acid maltase deficiency (Pompe's disease) is myopathic form of glycogen storage disease (muscular glycogenosis). Thus, AST/ALT ratio may be more than 2.
- Other three options are liver glycogenoses (AST/ALT < 1, as ALT is raised more than AST).

## 360. Rate limiting step in heme synthesis is catalyzed by ?

a) ALA dehydratase

b) ALA synthase

c) UPG decarboxylase

d) Ferrochelatase

Correct Answer - B

**Ans. B. ALA synthase**

**Synthesis of heme**

- Heme synthesis takes place in all cells, but occurs to greatest extent in bone marrow and liver.
- The first step in the synthesis of heme is the condensation of glycine and succinyl Co-A to form &-aminolevulinic acid (Delta-ALA), which occurs in mitochondria.
- This reaction is catalyzed by Delta-ALA synthase which requires pyridoxal phosphate (PLP) as cofactor.
- This is the rate limiting step in heme synthesis.

## 361. Rate limiting step in porphyrine synthesis -

a) ALA dehydratase

b) ALA synthase

c) UPG decarboxylase

d) Ferrochelatase

Correct Answer - B
**Ans. is. B. ALA synthase**

## 362. Heme synthesis requires

a) Ferrous iron

b) Glycine

c) Succhyl CoA

d) All

Correct Answer - D

## 363. End product of porphyrin metabolism ?

a) Albumin

b) $CO_2$ & $NH_2$

c) Bilirubin

d) None

Correct Answer - C
**Ans. is 'c' i.e., Bilirubin**

- Heme is the most important porphyrin.
- It is degraded into bilirubin.

## 364. Strongest interactions among the following

a) Covalent

b) Hydrogen

c) Electrostatic

d) Van der Waals

Correct Answer - A
**Ans. A. Covalent**
Strongest bond → Covalent
Weakest bond → Van der wals forces
**Moleucular interactions**
There are two types of interactions between molecules that stabilize molecular structures :-
1. Covalent bonds, e.g. peptide bonds and disulphide bonds.
2. Non-covalent bonds.

## 365. Which of the following is a homopolysaccharide?

a) Heparin

b) Chitin

c) Hyaluronic acid

d) Chondroitin sulfate

Correct Answer - B
**Ans. is 'b' i.e., Chitin**
**Polysaccharides are classified into ?**
*a) Homopolysaccharides (Homoglycans) :-* This type of polysaccharide is made up of several units of same monosaccharide unit only. Examples are *starch* (multiple units of glucose), *glycogen* (multiple units of glucose), *cellulose* (multiple units of glucose), *Inulin* (multiple unit of fructose), *Dextrin, Dextran* (multiple units of glucose), and *chitin.*
*b) Heteropolysaccharides (Heteroglycans) :-* This type of polysaccharide contains two or more different types of monosacharide units. Examples are *heparin, heparan sulfate, chondroitin sulfate, dermatan sulfate, hyaluronic acid, keratan sulfate and blood group polysaccharides.*

**366. Proteins are separated on the basis of charge in ?**

a) SDS-PAGE

b) Ultracentrifugation

c) Affinity chromatography

d) HPLC

Correct Answer - D
Ans. is 'd' i.e., HPLC

## 367. Following is true regarding sulhydryl groups except?

a) They are present in coenzyme A and lipoic acid

b) They are present in Captopril and penicillamine

c) They are not involved in reduction of peroxides

d) They are present in cysteine

Correct Answer - C

Ans. is 'c' i.e., They are not involved in reduction of peroxides

- Sulfhydryl Group (or thiol group)
- It is an SH group of organic compounds.
- Sulfhydryl groups have great and varied reactivity. They oxidize easily, with the formation of disulfides and
- sulfenic, sulfinic, or sulfonic acids, and they readily undergo alkylation, acylation, and thiol-disulfide exchange.
- They form mercaptides upon reacting with the ions of heavy metals, and they form mercaptals and mercaptols upon reacting with aldehydes and ketones, respectively.
- Sulfhydryl groups play an important role in biochemical processes.
- The sulfhydryl groups of coenzyme A, lipoic acid, and 4'-phosphopantotheine participate in enzymatic reactions for the formation and transfer of acyl residues that are related to lipid and carbohydrate metabolism.
- The sulfhydryl groups of glutathione play an important role in the neutralization of foreign organic compounds and the reduction of peroxides; they are also of major importance in the fulfillment by glutathione of its function as a coenzyme.
- In proteins, residues of the amino acid cysteine have sulfhydryl groups.

- As components of the active centers of a number of enzymes, sulfhydryl groups participate in the catalytic effect of the enzymes and in the binding of substrates, coenzymes, and metal ions.
- Drugs containing sulfhydryl groups are: captopril, zofenopril and penicillamine.

## 368. Replacement of columnar epithelium in respiratory tract to squamous epithelium is ?

a) Hyperplasia

b) Hypoplasia

c) Metaplasia

d) None of the above

Correct Answer - C

**Ans. is `c' i.e., Metaplasia**

**<u>Metaplasia</u>**

- Metaplasia is a reversible change in which one differentiated cell type is replaced by another differentiated cell type.
- Metaplasia represents an adaptive substitution of cells that are sensitive to stress by cell types better able to withstand the adverse environment.

## 369. In apoptosis, protein hydrolysis is due to activation of

a) lipases

b) Transcarboxylase

c) Catalase

d) Caspases

Correct Answer - D
**Answer- D. Caspases**
**The execution phase of apoptosis**

- In this phase, initiate caspases (Caspase - 8 & 9) activate other caspases known as execution Caspases (Caspases- 3 & 7). After being activated the caspases act on many cellular components.
- In the nucleus, the target of caspase activation includes proteins involved in transcription, DNA replication, and DNA repair. Caspases activate endonucleases (DNAases) that causes double-stranded breaks in DNA.

## 370. Execution caspases of apoptosis are

a) Caspase 1 & 3

b) Caspase 3 & 5

c) Caspase 1 & 5

d) Caspase 3 & 7

Correct Answer - D
**Answer- D. Caspase 3 & 7**
Initiate caspasess → Caspase - 8 & 9.
Execution caspases → Caspase - 3 & 7.
Initiate caspases are activated in initiation phase of apoptosis.

## 371. Execution caspases of apoptosis are ?

a) Caspase 1 & 3

b) Caspase 3 & 5

c) Caspase 1 & 5

d) Caspase 3 & 7

Correct Answer - D
Ans. is 'd' i.e., Caspase 3 & *7*

## 372. Annexin Visa marker of

a) Apoptosis

b) Necrosis

c) Artherosclerosis

d) Inflammation

Correct Answer - A
Ans. is 'a' i.e., Apoptosis
*o* Annexin V assays provides simple and effective method to detect apoptosis at a very early stage.
o This assay makes advantage of the fact that phosphatidylserine (PS) is translocated from the inner *(cytoplasmic)*
leaflet of the plasma membrane to the outer *(cell surface)* leaflet soon after the induction of apoptosis and that the
annexin V protein has strong specific affinity for phosphatidyl serine.
o Phosphatidyl serine on the outer leaflet is available to bind labelled annexin V providing the basis for a simple staining assay.
o All of the annexin proteins share the property of binding calcium and phospholipids.
o Annexin V is a cause of syndrome called antiphospholipid antibody syndrome.
o Annexin V normally forms a shield around certain phospholipid molecules that blocks their entry into coagulation (clotting) reactions.
o In the antiphospholipid antibody syndrome; the formation of the shield is disrupted by the abnormal antibodies. Without the shield, there is an increased quantity of phospholipid molecules on cell membranes speeding up coagulation reactions and causing the abnormal blood clotting characteristic of antiphospholipid antibody syndrome.

## 373. Lipid peroxidation of polyunsaturated lipids of subcellular membranes produces ?

a) Lipofuscin

b) Hemosiderin

c) Both of above

d) None of above

Correct Answer - A
Ans. is 'a' i.e., Lipofuscin

- Lipofuscin is an insoluble pigment, also known as lipochrome or wear-and-tear pigment.
- Lipofuscin is composed of polymers of lipids and phospholipids in complex with protein, suggesting that it is derived through lipid peroxi- dation of polyunsaturated lipids of subcellular membranes.

## 374. Hypertrophy is -

a) Increase in cell number

b) Increase in cell size

c) Decrease in cell number

d) Decrease in cell size

Correct Answer - B
Ans. is 'B' i.e., Increase in cell size
Hypertrophy
* Hypertrophy refers to an *increase in the size of cells* without increase in the number, resulting in an increase in the size of tissue.
* Hypertrophy involves cell enlargement without cell division.
* So, hypertrophied organ has just larger cells, but no new cells (by contrast, in hyperplasia there is increase in number of new cells without increase in size).
* Nuclei in hypertrophied cells have a higher DNA content than in normal cells because the cells arrest in the cell cycle without undergoing mitosis.
* *Myocardium* (heart muscle) and *skeletal muscle* undergo hypertrophy.
* The most common stimulus for hypertrophy is increased workload.
**Mechanism of hypertrophy**
* The increase in cell size is due to *synthesis of more structural proteins.*
* The genes that are induced during hypertrophy include those encoding transcription factors (C-fos, C-jun), growth factors (TGF-(3, TGF- 1, FGF); and vasoactive agents (a-agonists, endothelin-1, angiotensin II).
* There may also be a switch of contractile proteins from adult to

fetal or neonatal forms, e.g., during myocardial hypertrophy, the a-myosin heavy chain is replaced by 13-form of the myosin heavy chain, which leads to decrease myosine ATPase activity and a slower, more energetically economical contraction.

* In addition, some genes that are expressed only in embryonic life are re-expressed in hypertrophied myocardium, e.g., in the embryonic heart, the gene for Atrial natriuratic peptide (ANP) is expressed in both atrium and ventricle. After birth, ventricular regulation of the gene is down regulated. Myocardial hypertrophy is associated with reinduction of ANF gene expression. ANP induces salt excretion by kidney L blood volume & pressure, decrease work load.

**Why do these changes occur ?**

* As already explained, the most common stimulus for myocardial hypertrophy is increased workload.
* All the above morphological changes that occur in hypertrophy either increase muscle activity (to handle the increased workload) or decrease the workload to heart.

## 375. Metastatic calcification is characterized by ?

a) Hypercalcemia

b) Hypocalcemia

c) Eucalcemia

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Hypercalcemia
Pathologic calcifications

- Dystrophic calcification: Deposition of calcium at sites of cell injury and necrosis.
- Metastatic calcification: Deposition of calcium in normal tissues, caused by hypercalcemia (usually a consequence of parathyroid hormone excess)

**376. Calcification of soft tissues without any distrubance of calcium metabolism is called -**

a) Ionotrophic calcification

b) Monotrophic calcification

c) Dystrophic calcification

d) Calcium induced calcification

Correct Answer - C
Ans. is 'c' i.e., Dystrophic calcification

## 377. Necrosis with cell bodies retained as ghost cells is ?

a) Coagulative necrosis

b) Liquefactive

c) Caseous

d) None

Correct Answer - A
Ans. is 'a' i.e., Coagulative necrosis

- The microscopic anatomy of coagulative necrosis shows a lighter staining tissue containing no nuclei with very little structural damage, giving the appearance often quoted as "Ghost cells" -> outlines of cells are retained so that the cell type can still be identified but their cytoplasmic and nuclear details are lost.

**378.** **The Fenton reaction leads to free radical generation when:**

a) Radiant energy is absorbed by water

b) Ferrous ions are converted to ferric ions

c) Nitric oxide is converted to peroxynitrite anion

d) Hydrogen peroxide is formed by, myeloperoxidase

Correct Answer - B

**Fenton reaction** involves the ferrous iron catalyzed conversion of hydrogen peroxide into a hydroxide ion and a hydroxyl free radical with the concurrent oxidation of ferrous iron to ferric iron.

**Fenton reaction:** H.J.H Fenton discovered in 1894 that several metals have a special oxygen transfer properties which improve the use of hydrogen peroxide.
Actually, some metals have a strong catalytic power to generate highly reactive hydroxyl radicals (.OH).
Since this discovery, the iron catalyzed hydrogen peroxide has been called Fenton's reaction.
Hydrogen peroxide is converted to hydroxyl radicals in the Fenton reaction.

The iron can exist in a number of different oxdation states. Therefore the oxidation of fe2+ by h2o2 can proceed through a one electron transfer or a two electron transfer. **Fentons reaction is an inner sphere one electron transfer process.** The h2o2 forms a complex with fe2+ before electron transfer takes place. After addition of the iron and the hydrogen peroxide, they are going to react together to generate some hydroxyl radicals as it shows in the following equations:
$Fe^{2+} + H_2O_2 \longrightarrow Fe^{3+} + .OH + OH^-$
$Fe^{3+} + H_2O_2 \longrightarrow Fe^{2+} + .OOH + H^+$

**Importance:** Hydroxyl radicals are the most powerful of the reactive oxygen species.It is capable of destroying any organic molecule.

**Uses:** Used to treat a large variety of water pollution such as phenols, formaldehyde, BTEX, pesticides and rubber chemicals.

**Ref:** Free Radicals in Medicine, By Radu Olinescu, Dr. Terrance L. Smith, Page 28

## 379. Which of the following is not a free radical scavenger -

a) Glutathione peroxidase

b) Superoxide dismutase

c) Catalase

d) Xanthine oxidase

Correct Answer - D
**Answer- D. Xanthine oxidase**
**Free radical scavgers (anti-oxidants) in body**
1. Non - enzymatic → Vitamins E, A & C, glutathione, cysteine, ceruloplasmin, transferrin, lactoforrin, ferritin.
2. Enzymes → Catalase, superoxide dismutase, glutathione peroxidase

## 380. Enzyme that protects the brain from free radical injury is -

a) Myeloperoxidase

b) Superoxide dismutase

c) MAO

d) Hydroxylase

Correct Answer - B
Ans. is 'b' i.e., Superoxide dismutase
Antioxidant mechanisms
Cells have multiple mechanisms to remove free radicals and thereby minimizing injury.
Several nonenzymatic and enzymatic systems contribute to the inactivation of free radical reactions.
A. Non-enzymatic system
o *Antioxidants (Vit 'E', Vit A, Vit C, glutathione and Cysteine)* block the initiation of free radical formation and inactivate free radicals.
**o** *Tissue proteins (transferrin, ferritin, lactoferrin, and ceruloplasmin).* As already explained, iron and copper can catalyze the formation of free radicals, these transport and storage proteins decrease the reactive free iron and copper, thereby minimizing the free radical formation.
B. Enzymatic system
o A series of enzymes act as free radical-scavenging systems and breakdown hydrogen peroxide and superoxide anion.
*1. Catalase*
**o** Present in *peroxisomes* and decomposes H202
$2\ H_2O_2 _____ O_2 + 2\ H_2O$

.. *2. Superoxide dismutase* (SOD)

**o** Manganese - superoxide dismutase is present in *mitochondria,* while copper-zinc-superoxide dismutase is found in the cytosol.

o It converts superoxide to H202

$$2\ 0_2^- + 2\ H \xrightarrow{SOD} 2\ H_20_2 + 02$$

*3. Glutathione peroxidase*

**o** Present in *mitochondria & cytosol.* **o** It catalyzes free radical breakdown.

$H_20_2$+2 G S H __ GSSG+2H20

20H+ 2 G SH _ > GSSG+2H20

**o The intracellular** *ratio of oxidized glutathione (G S S G) to reduced glutathione (G S M) is a reflection of the oxidative state of the cell.*

## 381. Cellular swelling with blebs and myelin figures are the changes seen in

a) Reversible cell injury

b) Irreversible cell injury

c) Metaplasia

d) Anaplasia

Correct Answer - A

**Answer- A. Reversible cell injury**

Pathological features of reversible cell injury are : Cellular swelling (earliest); loss of microvilli; cytoplasmic membrane blebs; ER swelling; Myeline figures; detachment of ribosome from ER; cytoplasmic (lipid) vacuole; clumping of chromatin.

## 382. First change seen in acute inflammation is:

***September 2009***

a) Increased permeability

b) Vasodilation

c) Neutrophil migration

d) Vasoconstriction

Correct Answer - D

Ans. **D:** Vasoconstriction

**Cardinal signs:**

- Rubor (redness) due to dilatation of arterioles
- Calor (heat)
- Dolor (pain) due to pressure on nerve endings by edema fluid and chemical mediator bradykinine
- Tumor (swelling) due to edema.
- Functio laesa (loss of function) due to inhibition of movement by pain and tissue necrosis.

## 383. Leukocyte adhesion to endothelium is mediated by all except ?

a) L selectin

b) E selectin

c) VCAM 1

d) VCAM 4

Correct Answer - D
Ans. is 'd' i.e., VCAM 4
**Endothelial molecule** P-selectin
E-selectin ICAM- 1 VCAM-1 Glycam-1
CD 31 (PECAM)

## 384. Endothelial molecule participating in rolling is

a) CD 34

b) CD 65

c) CD 56

d) CD 100

Correct Answer - A
**Answer- A. CD 34**
**Adhesion molecules involved in Rolling :**
1. Endothelial molecules : P-selectin, E-selectin, GlyCam-1, CD-34.
2. Leucocyte molecules : Sialyl-Lewis X-modified protein, L-selectin.

## 385. Matrix metalloproteinases is ?

a) Cathepsin

b) Zn metalloproteinases

c) Cu metalloproteinases

d) Cd metalloproteinases

Correct Answer - A
Ans. is b i.e., Zn metalloproteinases
The outcome of the repair process of tissues is influenced by a balance between synthesis and degradation of ECM proteins.
After its deposition, the connective tissue in the scar continues to be modified and remodeled.
The degradation of collagens and other ECM components is accomplished by a family of matrix *metalloproteinases (MMPs),* so called because they are dependent on metal ions (e.g., zinc) for their activity.
MMPs include interstitial collagenases, which cleave fibrillar collagen (MMP-1, -2 and -3); gelatinases (MMP-2 and 9), which degrade amorphous collagen and fibronectin; and stromelysins (MMP-3, -10, and ,11), which degrade a variety of ECM constituents, including proteo- glycans, laminin, fibronectin, and amorphous collagen.

## 386. What generates intracellular signals when cells are subjected to shear stress

a) Cadherins

b) Selectins

c) Integrins

d) Focal adhesion molecules

Correct Answer - D
**Answer- D. Focal adhesion molecules**
Focal adhesion complexes are large (>100 proteins) macromolecular complexes that can be localized at hemidesmosomes, and include proteins that can generate intracellular signals when cells are subjected to increased shear stress, such as endothelium in the bloodstream, or cardiac myocytes in a failing heart.

## 387. True about wound healing with primary intention is

a) By day 5 epidermis recovers its normal thickness

b) Intense inflammatory reaction

c) Wound contraction occurs

d) Abundant granulation tissue grows

Correct Answer - A

**Answer- A. By day 5 epidermis recovers its normal thickness**

**Healing by primary intention**

- It occurs in wounds with opposed edges, e.g., surgical incision.

**The healing process follows a series of sequential steps : -**

**Immediate after incision**

- Incisional space filled with blood containing fibrin and blood cells.
- Dehydration of the surface clot forms scab that covers the wound.

**Within 24 hours**

- Neutrophils appear at the margins of wound.

**In 24-48 hours**

- Epithelial cells move from the wound edges along the cut margin of dermis, depositing basement membrane components as they move.
- They fuse in the midline beneath the surface scab, producing a continuous but thin epithelium layer that closes the wound.

**By day 3**

- Neutrophils are largely replaced by macrophages.
- Granulation tissue progressively invades the incision space.
- Collegen fibers now present in the margin but do not bridge the incision.

**By day 5**

- Incisional space is largely filled with granulation tissue.

- Neovascularization is maximum.
- Collegen fibrils become more abundant and begin to bridge the incision.
- The epidermis recovers its normal thickness.

**During second week**

- Leukocytes and edema have disappeared.
- There is continued accumulation of collegen and proliferation of fibroblast.

**By the end of first month**

- Scar is made up of a cellular connective tissue devoid of inflammatory infiltrate covered now by intact epidermis.

## 388. The definition of exudate is

a) Extravascular fluid that has a high protein concentration and contains cellular debris

b) Extravascular fluid that has a low protein concentration

c) Extravascular fluid with high glucose concentration

d) Extravascular fluid with low glucose concentration

Correct Answer - A
**Answer- A. Extravascular fluid that has a high protein concentration and contains cellular debris**
Exudate is an inflammatory fluid that contains high protein content, cellular debris, and specific gravity >1.020. It occurs due to increased vascular permeability.

## 389. In tuberculosis the cytokine causing fever is

a) ILI

b) IL2

c) IL3

d) IL4

Correct Answer - A
**Answer- A. ILI**
**Pyrogenes**

- Pyrogenes are substances that cause fever.
- Pyrogens may be exogenous or endogenous
- Exogenous -4 Bacterial toxins
- Endogenous → IL-1, TNF-a, IL-6, Interferons, Ciliory's neurotropic factor

## 390. Which acute phase reactant induces rouleaux formation

a) C reactive protein

b) Fibrinogen

c) Serum amyloid A

d) IL 1

Correct Answer - B
**Answer- B. Fibrinogen**
Fibrinogen binds to red cells and causes them to form stacks (rouleatix) that sediment more rapidly at unit gravity than do individual red cells.

## 391. Activation of naïve B lymphocytes by protein antigens is?

a) T Cell independent

b) NK cell dependent

c) NK cell independent

d) T cell dependent

Correct Answer - D
Ans. is d i.e., T cell dependent
Upon activation, B lymphocytes proliferate and then differentiate into plasma cells that secrete different classes of antibodies with distinct functions.
Antibody responses to most protein antigens require T cell help and are said to be *T-dependent.*
Many polysaccharide and lipid antigens cannot be recognized by T cells but have multiple identical antigenic determinants (epitopes) that are able to engage many antigen receptor molecules on each B cell and initiate the process of B-cell activation; these responses are said to be *T-independent.*

## 392. Mantoux test is based on which hypersensitivity?

a) Type 1

b) Type 2

c) Type 3

d) Type 4

Correct Answer - D
**Ans. is 'd' i.e., Type 4**
**Following are the examples of type 4 hypersensitivity reactions :-**

- Type 1 diabetes mellitus
- Hashimoto thyroiditis
- Crohn's disease
- Multiple sclerosis
- Contact dermatitis
- Mantoux test

## 393. Atopy in hypersensitivity is ?

a) Systemic type I hypersensitivity

b) Local type I hypersensitivity

c) Systemic type II hypersensitivity

d) Local type II hypersensitivity

Correct Answer - B
Ans. is `b' i.e., Local type I hypersensitivity

- Anaphylaxis -3 Acute, potentially fatal, systemic.
- Atopy ->Chronic, Nonfatal, Localized.

## 394. Macrophage activation syndrome characterized by all except ?

a) Activation of CD 8 + T cells

b) Presence of cytokine storm

c) It is the other name for hemophagocytic lymphohistiocytosis

d) Low levels of plasma ferretin

Correct Answer - D

**Ans. is 'd' i.e., Low levels of plasma ferretin**

***Hemophagocytic Lymphohistiocytosis***

- Hemophagocytic lymphohistiocytosis (HLH) is a reactive condition marked by cytopenias and signs and symptoms of systemic inflammation related to macrophage activation. For this reason, it is also sometimes referred to as macrophage activation syndrome.

***Pathogenesis***

- The common feature of all forms of HLH is systemic activation of macrophages and CD8+ cytotoxic T cells.
- The activated macrophages phagocytose blood cell progenitors in the marrow and formed elements in the peripheral tissues, while the "stew"of mediators released from macrophages and lymphocytes suppress hematopoiesis and produce symptoms of systemic inflammation.
- These effects lead to cytopenias and a shock-like picture, sometimes referred to as "cytokine storm" or the systemic inflammatory response syndrome.
- Familial forms of HLH are associated with several different mutations, all of which impact the ability of cytotoxic T cells and NK to properly form or deploy cytotoxic granules.
- The most common trigger for HLH is infection, particularly with

Epstein-Barr virus (EBV).

***Clinical Features***

- Most patients present with an acute febrile illness associated with splenomegaly and hepatomegaly.
- Hemophagocytosis is usually seen on bone marrow examination, but is neither sufficient nor required to make the diagnosis.
- Laboratory studies typically reveal anemia, thrombocytopenia, and very high levels of plasma ferritin and soluble IL-2 receptor, both indicative of severe inflammation, as well as elevated liver function tests and triglyceride levels, both related to hepatitis.
- Coagulation studies may show evidence of disseminated intravascular coagulation. If untreated, this picture can progress rapidly to multiorgan failure, shock, and death.

**Treatment**

- Involves the use of immunosuppressive drugs and "mild" chemotherapy.
- Patients with germline mutations that cause HLH or who have persistent/resistant disease are candidates for hematopoietic stem cell transplantation.
- Without treatment, the prognosis is grim, particularly in those with familial forms of the disease, who typically survive for less than 2 months.

## 395. HLA associated with rheumatoid arthritis is ?

a) HLA B27

b) HLA DR 4

c) HLABI9

d) HLA DR2

Correct Answer - B
Ans. is `b' i.e. HLA DR4
Associated with the development of Rheumatoid arthritis
• HLA - DR 4
• HLA - DR 10
• HLA - DR 9

Protects against the development of Rheumatoid arthritis
• HLA - DR 5
• HLA - DR 2
• HLA - DR 3

## 396. Which of the following interleukin is secreted by T helper 2 cells?

a) IL 11

b) IL 7

c) IL 1

d) IL 13

Correct Answer - D
Ans. is 'd' i.e., IL 13

**A) T helper - 1 ($T_F$,') secretes 4 IL-2 and interferon - y**

**B) T helper - 2 ($T_0^2$) secretes -> IL-4, IL-5, IL-6, IL-13**

## 397. Interleukin 2 is produced by

a) T helper cells 1

b) T helper cells 2

c) Natural killer cells

d) Basophils

Correct Answer - A
Ans. is 'a' i.e., T helper cells 1

**A) T helper - 1 ($T_F$,') secretes 4 IL-2 and interferon - y**

**B) T helper - 2 ($T_0^2$) secretes -> IL-4, IL-5, IL-6, IL-13**

## 398. Non professional antigen presenting cell is A/E ?

a) Endothelial cell

b) Epidermal cell

c) Fibroblasts

d) Red blood cells

Correct Answer - D

**Ans. is 'd' i.e., Red blood cells**

**<u>Non-professional antigenpresenting cell</u>**

- A non-professional APC does not constitutively express the Major Histocompatibility Complex class II (MHC class II) proteins required for interaction with naive T cells; these are expressed only upon stimulation of the non? professional APC by certain cytokines such as IFN-y.
- All nucleated cells express the Major Histocompatibility Complex class I necessary to be considered a nonprofessional APC.
- As erythrocytes do not have a nucleus, they are one of the few cells in the body that cannot display antigens.

## 399. Large granular lymphocytes are ?

a) B cells

b) NK cells

c) T cell

d) Plasma cells

Correct Answer - B

**Ans. is 'b' NK cells**

**<u>Null cells (Large granular lymphocytes)</u>**

- Null cells are called so because they lack features of surface markers of both B and T lymphocytes.
- The account for 5 to 10% of peripheral blood lymphocytes.
- They are also called *"large granular lymphocytes (LGL)"* as they contain large *azurophilic cytoplasmic granules.*
- **Members of this group are:**
  a) Antibody dependent cytotoxic cells (ADCC)
  b) Natural killer cells (NK Cells)

## 400. NK cell shows presence of ?

a) CD 44

b) CD 16

c) CD 54

d) CD 32

Correct Answer - B
Ans. is 'b' i.e., CD 16

- These cells possess cytotoxic activity against *virus infected cells, tumor cells and transplanted foreign cells.*
  - Cytotoxicity of NK cells is *neither antibody dependent nor MHC restricted.* Activity is *nonimmune* as it *does not require antigenic stimulation.*
  - NK-cells are *positive for CD16 and CD56.*
  - NK cells are usually *negative for CD3,* but a *subset is positive for CD3* called NK/T-cells.

## 401. LE cell is seen in ?

a) Lupus erythmatosus

b) Lupus vulgaris

c) HNPCC

d) Medullary carcinoma of thyroid

Correct Answer - A
Ans. is 'a' i.e., Lupus erythematousus

- In SLE, antinuclear antibodies (AN Ps) can not penetrate intact cells.
- However, nuclei are exposed, ANA can bind to them.
- In tissues, nuclei of damaged cells react with ANAs, lose their chromatin pattern, and become homogeneous, to produce *lupus - erythematous (LE) bodies* or hemotoxylin bodies.
- When these LE bodies are engulfed by phagocytic cells *(neutrophil or macrophage/monocyte),* the phagocytic cells are called *LE cells.*

## 402. Increased permeability in acute inflammation is due to?

a) Histamine

b) IL-2

c) TGF-(3

d) FGF

Correct Answer - A
Ans. is 'a' i.e., Histamine

- Formation of endothelial gaps in venules, i.e. immediate transient response is the most common mechanism causing increased vascular permeability in acute inflammation.
- Mediators involved in this mechanism are :-
- Immediate (more important) : Histamine, bradykinin, leukotrienes, neuropeptide substance P.
- Somewhat delayed: IL-1, TNF, IFN-y

## 403. Inceased accumulation of fluid in the interstitial space is described as ?

a) Edema

b) Effusion

c) Transudate

d) Exudate

Correct Answer - A
Ans. is 'a' i.e., Edema
Edema: accumulation of fluid in the interstitial space
Effusion: accumulation of fluid in the body cavities

## 404. Hyperimmune IgE syndrome is also called

a) Jobs syndrome

b) Wiscott Aldrich syndrome

c) Chediak-Higashi syndrome

d) Digeorge syndrome

Correct Answer - A
**Answer- A. Jobs syndrome**
Job's syndrome, also called Hyper-IgE syndrome or Hyperimmunoglobulin E syndrome, is an autosomal dominant disorder due to mutations in Signal Transducer and Activator of Transcription-3 (STAT-3).
There is defect in phagocytosis. IgE levels are elevated. Other immunoglobulins are normal.

## 405. Cells responsible for GVHD is ?

a) Immunocompetent T cell donor

b) Immunocompetent T Cell recipient

c) Immunocompetent B cell donor

d) Immunocompetent B cell donor

Correct Answer - A
**Ans. is 'a' i.e., Immunocompetent T-cell donor**
**<u>Graft- versus-host disease (GVHD)</u> :?**
GVHD occurs when immunologically competent cells (T cells) or their precursors are transplanted into immunologically crippled recipients, and the transferred cells recognize alloantigens in the host and attack host tissues.
*Most commonly involved tissues in Graft versus host disease :-*

- Liver
- Skin
- Gut

## 406. Leukocyte migration through endothelium is induced by ?

a) Selectin

b) N CAM

c) C CAM

d) PECAM

Correct Answer - D
Ans. is 'd' i.e., PECAM

- Migration of the leukocytes through the endothelium is called transmigration or diapedesis.
- Transmigration of leukocytes occurs mainly in postcapillaryvenules.
- The molecules involved in transmigration are member of the immunoglobulin superfamily called CD31 or PECAM-1 (platelet endothelial cell adhesion molecule).

## 407. Complement CI synthesized from -

a) Liver

b) Macrophage

c) Intestinal epithelium

d) Endothelium

Correct Answer - C
**Answer- C. Intestinal epithelium**
CI is synthesized in intestine; C2 and C4 are synthesized by macrophages; C5 and C8 are synthesized in spleen; and C3, C6 and C9 are synthesized in liver.
[Ref: Short textbook of medical microbiology by Satish Gupte p. 92]

## 408. RAST test is used in diagnosis of

a) Allergic dermatitis

b) Seborrhoeicdematitis

c) Mycosis fungoides

d) Squamous cell carcinoma

Correct Answer - A
Ans. is 'a' i.e., Allergic dermatitis
RAST : Radioallergosorbent assay

- It is the method used to measure total as well as specific IgE against a particular allergen or a complex.

**Diagnostic tests in allergic contact dermatitis**

- Diagnostic Tests (if indicated)
- Patch testing
- Photopatch testing
- Tests for immediate hypersensitivity

**Radioallergosorbent assay test (RAST)**

- Open and semiopen patch tests (read at 10 and 45 minutes)
- Prick test
- Scratch-chamber test
- Repeat open application "use" test
- Potassium hydroxide examination to fungi, glass fibers
- Fungal, bacterial, and viral smears and cultures
- Skin biopsies
- Dimethylglyoxime test for detecting nickel, other tests (detection of chromates and formaldehyde)
- Chemical analysis

## 409. Perform are produced by

a) NK cell

b) Cytotoxic T cell

c) Plasma cell

d) Monocyte

Correct Answer - A
**Answer- A. NK cell**
Perforins are hole forming proteins, cause transmembrane pores through which cytotoxic factors enter the cell and destroy it by apoptosis.
Perforins are produced by:
N.K. Cells
[Ananthanarayan 126]

## 410. HLA B51 is associated with ?

a) Behcet's disease

b) Chrug strauss syndrome

c) Microscopic polyangitis

d) Polyarteritis nodosa

Correct Answer - A
**Ans. is 'a' i.e., Behcet's disease**
**Behcet's disease :?**

- Behcet disease is a small- to medium-vessel neutrophilic vasculitis that classically presents as a clinical triad of recurrent oral aphthous ulcers, genital ulcers, and uveitis.
- There can also be gastrointestinal and pulmonary manifestations, with disease mortality related to severe neurologic involvement or rupture of vascular aneurysms. There is an association with certain HLA haplotypes (HLAB51, in particular)

## 411. EBV receptor mimics ?

a) CD 20

b) CD 21

c) CD 22

d) CD 23

Correct Answer - B
Ans. is 'b' i.e., CD 21

- CD 21 -> EBV receptor : Mature B cells and follicular dendritic cells.

## 412. Trauma to breast causes which type of necrosis ?

a) Coagualtive necrosis

b) Liquefactive necrosis

c) Caseous necrosis

d) Fat necrosis

Correct Answer - D
**Ans. is 'd' i.e., Fat necrosis**
***Fat* necrosis**
Fat necrosis may be of two types : ?
**Enzymatic fat necrosis**

- This is due to action of *lipase* on adipose tissue.
- It occurs most frequently in *acute pancreatitis* due to leakage of lipase.
- Depending on the severity of acute pancreatitis, fat necrosis may occur in : - *a Adipose tissue contiguous to pancrease, retroperitoneal fat.*
- Adipose tissue in *anterior mediastinum.*
- *Bone marrow*
- *Omental and abdominal fat*

**Nonenzymatic or Traumatic fat necrosis**

- Occurs due to trauma
- Is seen in *subcutaneous tissue of breast, thigh,* and *abdomen.*

## 413. Most common cause of death in amyloidosis is ?

a) Heart failure

b) Renal failure

c) Sepsis

d) None

Correct Answer - A
Ans. is 'a' i.e., Heart Failure
`*Most common cause of death is heart failure and/or abnormal cardiac rhythm' Essentials pathology*

## 414. Fibrosis is due to ?

a) TGF-

b) TNF -

c) IL - 7

d) IL - 10

Correct Answer - A
Ans. is 'a' i.e., TGF- 13
*"TFG-b is practically always involved as an important fibrogenic agent"* — *Robbins*

- Mediaters involved in fibrosis *:?*

*i)* *Growth factors :-* TGF-(3, PDGF, FGF
*ii)* *Cytokines :* IL-1, IL-4, TNF, IL-13

## 415. Most important growth factors in angiogenesis ?

a) PDGF

b) TGF alpha

c) TGF beta

d) VEGF

Correct Answer - D
Ans. is 'd i.e., VEGF

- *Two most important angiogenic factors are :*
  *i) Vascular endothelial growth factor (VEGF) —> most important.*
  *ii) Basic fibroblast growth factor (FGF-2).*

## 416. Which is the best marker of SLE ?

a) Anti Sm antibodies

b) Anti dsDNA antibodies

c) Anti histone antibodies

d) Anti Ro Antibodies

Correct Answer - B
Ans. is 'b' i.e., Anti dsDNA antibodies
*Antibodies to double - stranded DNA and the Smith (Sm) antigen are virtually diagnostic of SLE".*

## 417. Pendred syndrome due to mutation of ?

a) Bartillin

b) Pendrin

c) Fibrillin

d) Reticulin

Correct Answer - B
**Ans. is `b' i.e., Pendrin**
**<u>Pendred syndrome or Pendred disease</u> :?**

- Pendred syndrome or Pendred disease is a genetic disorder leading to congenital bilateral (both sides) sensorineural hearing loss and goitre with occasional hypothyroidism.
- It has been linked to mutations in the *PDSgene,* which codes for the *pendrin* protein (solute carrier family 26, member 4, SLC26A4). The gene is located on the long arm of chromosome 7 (7q31). It is an autosomal recessive disorder.

## 418. Inheritance pattern of myotonic dystrophy is ?

a) Autosomal recessive

b) Autosomal dominant

c) X linked dominant

d) X linked recessive

Correct Answer - B
**Ans. is `b' i.e., Autosomal dominant**
**<u>Myotonic dystrophy</u>**

- Myotonic dystrophy is an autosomal dominant multisys- tem disorder associated with skeletal muscle weakness, cataracts, endocrinopathy, and cardiomyopathy

## 419. Neurofibromatosis shows which of the following mode of inheritance ?

a) AD

b) AR

c) X linked dominant

d) X linked recessive

Correct Answer - A

**Ans. is 'a' i.e., AD**

**Neurofibromatosis shows autosomal dominant inheritance pattern**

- *Single gene disorders (Mendelian disorders) typically follow one of the three patterns of inharitance* ?

a. Autosomal dominance
b. Autosomal recessive
c. X-linked

**<u>Autosomal dominant disorders</u>**

- Normally a gene pair has two alleles.
- When one allele becomes abnormal due to mutation it is called *heterozygous state.*
- When both the alleles become abnormal due to mutation it is called *homozygous state.*
- *Autosomal dominant disorders are manifested in heterozygous state,* i.e. only if one allel is abnormal the disease will be manifested.

## 420. The inheritance pattern of familial Retinoblastomas is -

a) Autosomal recessive

b) Autosomal dominant

c) X-linked dominant

d) X-linked recessive

Correct Answer - B
Ans. is 'b' i.e., Autosomal dominant

- Huntington disease
- Neurofibro-matosis
- Myotonic dys-trohy
- Tuberous scle-rosis
- Retinoblastoma

## 421. Gene responsible for Wilson disease is situated on which chromosome?

a) Chromosome 11

b) Chromosome 12

c) Chromosome 13

d) Chromosome 14

Correct Answer - C
Ans. is 'c' i.e., Chromosome 13
Wilson disease is an autosomal recessive disorder caused by mutation of the ATP7B gene, resulting in impaired copper excretion into bile & failure to incorporate copper into ceruloplasmin.
The ATP 7 B gene is located on chromosome 13.

## 422. Barr body is NOT seen in:
***PGI 07; WB 08***

a) Turner syndrome

b) Klinefelter syndrome

c) Down's syndrome

d) Marfan's syndrome

Correct Answer - A
Ans. Turner syndrome
**Barr body (Sex - chromatin)**

- It is a densely staining inactivated condensed 'X' chromosome that is present in each somatic cells of female. o It is found in the *nucleus.*
- It is used as a test of genetic *femaleness -4* it is possible to determine the genetic sex of an individual according as to whether there is a chromatin mass present on the inner surface of the nuclear membrane of cells with resting or intermitent nuclei. Remember following fact and the question will seem very easy.
- *Chromatid body (Barr body or sex chromatin) is derived from one of the two X-chromosomes which becomes inactivated.*
- *The numer of Barr bodies is thus one less than the number of X-chromosomes.*

## 423. Which of the following is not a hereditary disease?

a) Neurofibromatosis

b) Cretinism

c) Huntingtons disease

d) Hereditary spherocytosis

Correct Answer - B
**Ans. is 'b' i.e., Cretinism**
**<u>Cretinism</u> :?**
Cretinism is a condition of severely stunted physical and mental growth due to untreated congenital deficiency of thyroid hormones (congenital hypothyroidism) usually due to maternal hypothyroidism. Thus cretinism is a non hereditary condition.

## 424. Boys are more likely to be affected by which genetic disorders ?

a) AD

b) AR

c) X linked dominant

d) X linked recessive

Correct Answer - D

**Ans. is 'd' i.e., X linked recessive**

**X-linked disorders**

- Except for a few conditions, all X-linked disorders are X-linked *recessive.*
- As male has only one X-chromosome, the male with affected gene on X-chromosome will always manifest the disease.
- On the other hand, female has 2 X-chromosomes, heterozyogous female will be carrier because of expression of normal allel on the other X-chromosome.
- So a boy has more probability to manifest X linked recessive as compared to girls

## 425. Classic example of missense mutation ?

a) Thalassemia

b) Sickle cell disease

c) Sideroblastic anemia

d) Hemochromatosis

Correct Answer - B

**Ans. is 'b' i.e., Sickle cell disease**

**In sickle cell anemia there is *missense type of point mutation.***

**Mutations**

- A mutation is *apermanant change in the DNA.*
- Mutations that affect genii cells (sperm or ovum) are transmitted to progeny and may give rise to inherited disease.
- Mutations that affect somatic cells arc not transmitted to progeny but are important in the genesis of cancers and congenital malformations.
- Mutations may be classified into three categories ?
  1. Gene mutations
- *The vast majority of mutations associated with hereditary disease are gene mutations.*
- These may of different types depending whether it involves complete gene or single base *?*
  *(a) Point mutation*
- A single nucleotide base is subustituted by a different base.
- When a pyrimidine base is subustituted by other pyrimidine base or a purine base is substituted by other purine
- *Transition.*
- When a purine is substituded by a pyrimidine or vice-versa Transversion.

- This may alter the code in a triplet of bases, i.e. in codon and leads to replacement of one aminoacid by another in the gene product.
- Because these mutations alter the meaning of the genetic code, they are often termed *missense mutation.*
- Example is *sickle mutation* in which CTC codon in 13-chain of hemoglobin that codes for glutamic acid is changed to CAC codon that codes for valine.
- Another type of point mutation is *nonsense mutation* in which a point mutation may change an amino acid codon to a stop codon.
  *3* Example is 13-thalassemia in which CAG codon in I3-chain of hemoglobin that code for glutamin is changed to stop codon UAG after point mutation.
  *(b) Deletion and insertions*
- Deletion or insertion of one or two base lead to alterations in the reading frame of the DNA strand —> *frame shift mutation.*
- If the number of base pairs invoved is three or a multiple of three framshift does not occur (because codon is triplet), instead an abnormal protein missing one or more amino acids is synthesized.
  *(c) Trinucleotide repeat mutation*
- Normally a codon is triplet ie trinucleotide.
- In this type of mutation a codon, ie trinucleotide sequence undergoes amplification and the same codon is repeated continuously so many times in the chain.
- For example in fragile X-syndrome, CGG codon is repeated 250-4000 times, ie. there are 250-4000 tandem repeates of CGG.
  2.Chromosome mutation
- Result from rearrangement of genetic material that give rise to visible structural changes in the chromosome. 3.Genome mutation
- Involves loss or gain of whole chromosome, e.g. *monosomy* - Turner syndrome, *trisomy* - Down syndrome.

## 426. Rb gene is located on which chromosome?

a) 6

b) 9

c) 13

d) 21

Correct Answer - C

**Ans. is 'c' i.e.,13** ***[Ref Robbin's 9tVe p. 290]***

- Retinoblastoma gene (RB gene) is located on 14 band on the long arm of chromosome 13 (13q14). RB gene is a tumor supressor gene.
- Retinoblastoma develops when both the normal alleles of the RB genes are inactive or altered. It is typical example of Knudson's two hit hypothesis.

## 427. Most common known causes of congenital anamolies in humans are

a) Chromosomal aberrations

b) Maternal infections

c) Drugs

d) Irradiation

Correct Answer - A
**Answer- A. Chromosomal aberrations**
**Genetic**

- Chromosomal aberrations- 10-15
- Mendelian inheritance

**Environmental**

- Maternal/placental infections- 2-3
- Maternal disease states- 6-8
- Drugs and chemicals- 1
- Irradiations

Multifactorial 20-25
Unknown- 40-60

## 428. Which is not a feature of Downs syndrome

a) Clinodactyly

b) Pigmented birth marks

c) Hypotonia

d) Respiratory tract Infections

Correct Answer - B
Ans. is 'b' i.e., Pigmented birth marks

- Other clinical features include ***:?***

***1)*** ***General :- Mental retardation,*** short stature
***2)*** ***Cranio-facial*** ***Brachycephaly,*** epicanthic fold, protruding tongue, small ears, upward sloping palpebral fissures ***(Mongoloid slant),*** strabismus, nystagmus, ***Brushfied spots in iris.***
*3)* *Limbs :-* ***Fifth finger clinodactyly,*** single palmar crease ***(simian crease),*** wide gap between first and second toes (sandle gap).
***4)*** ***Congenital heart disease :-*** Common AV canal, ***ASD (most common), VSD,*** PDA, fallot tetralogy.
***5)*** ***GIT :-*** Anal atresia, ***Duodenal atresia, Hirschsprung disease, annular pancreas.***
***6)*** ***Increased incidence of leukemia (1%).*** Leukemias common are ***ALL (most common), AML (M7-AML) transient myeloproliferative disorders,*** and Juvenil CML.

## 429. All of the following are true for Turners syndrome except:
***March 2012***

a) Height is more than 145 cm

b) Webbing of neck

c) Increased carrying angle

d) Coarctation of aorta may be seen

Correct Answer - A

**Ans: A i.e. Height is more than 145**

**Turner syndrome**

- Adult stature in Turner syndrome patients is less than 145 cm
- Associated congenital defects are common in heart (coarctation of aorta)
- Lymphedema,
- Short stature,
- Webbed neck,
- Low posterior hairline,
- Cubitus valgus (increased carrying angle),
- Finger deformities,
- Short 4th metacarpal,
- 45 X0 karyotype

**Down syndrome**

- MC trisomy,
- Brachycephalic skull,
- Hypotonia,
- Palpebral fissure slopes upwards,
- Marked epicanthic folds,

- Brushfield's spots,
- Increased nuchal fold thickness,
- Iliac index less than 60,
- Simian crease (single palmar crease),
- MC associated cardiac lesions: VSD
- Duodenal atresia, CML & transient myeloproliferative disorders are seen
- May be associated with Alzheimer's dementia,
- MC cause of down syndrome: Maternal non-disjunction

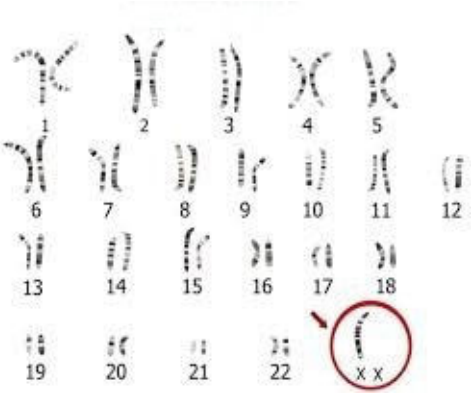
**Klinefelter syndrome**

- 47 XXY
- MC cause of hypergonadotrophic hypogonadism,
- Subnormal intelligence

**Fragile X syndrome**

- Large forehead,
- Large head,
- Macro-orchidism,
- Moderately to severely retarded

## 430. Diagnose the disorder by looking at the karyotype shown in the picture below?




a) Down's syndrome.

b) Patau syndrome.

c) Turner syndrome.

d) Klinefelter's syndrome.

Correct Answer - C

**Turner's syndrome**

- Turner's syndrome is the most common sex chromosomal disorder in phenotypic females.
- ***Turner's syndrome results from complete or partial loss of one X chromosome (45, X) and is characterised by hypogonadism in phenotypic females***

**Features of Turner syndrome in children :?**

- The most severely affected patients generally present during infancy with edema (owing to lymph stasis) of the dorsum of the hand and foot and sometimes swelling of the nape f the neck.
- **Swelling of the neck is related to markedly distended lymphatic channels, producing so called** cystic hygroma.

- As these infants develop, the swelling subsides but often leave bilateral neck webbing and persistent looseness of skin on the back of the neck.
- **Congenital heart disease** is also common, particularly preductal coarctation of Aorta and bicuspid Aortic valve.
- C. VS abnormalities are most important cause of mortality in children with Turner 's syndrome.
- *Features of Turner's syndrome in Adolescents and Adult:-*
- At puberty there is *failure to develop normal secondary sex characteristics.*
- The genitalia remains *infantile,* breast development is *inadequate* and there is little pubic hair. *Nipples are widely spaced.*
- Turner syndrome is the single most important cause of primary amenorrhoea accounting for approximately 1/3 of the cases.
- *Short stature* (height rarely exceeds 150 cm).
- The mental status of these patients *is usually normal* but subtle defects in nonverbal, visual spatial information processing have been noted *(mental retardation is associated with the presence of extra chromosome* not with loss of X chromosome).
- About 50% of the patients develop autoantibodies directed to the *thyroid gland* and upto one half of these patients develop *hypothyroidism.*
- Other features include *low posterior hairline, webbing of neck, cubitus valgus, streak ovaries.* o Glucose intolerance, obesity and insulin resistance are also seen.

## 431. Normal upper limit of CA - 125 is ?

a) 25 U/ ml

b) 45 U/ ml

c) 65 U/ ml

d) 85 U/ ml

Correct Answer - A

**Ans. is `a' i.e., 25 U/ ml**

The normal value is less than 35 U/mL

**1) Carcinoembryonic antigen (CEA)**

- It is a glycoprotein produced by fetal gut, pancreas and liver.
- It is used as tumor marker for colorectal cancer (major use), *lung cancer, breast cancer and ovarian cancer.* It is also increased in non-neoplastic conditions like *alcoholic cirrhosis, hepatitis, IBD (CD, UC), smoking and pancreatitis.*
- In colorectal cancer it is used for screening; *response and follow up after surgery* (CEA *should diseapper in 6 weeks after resection), prognosis (higher levels suggests high tumor burden)* and *to see recurrence on follow up.* CEA antigen has no correlation with hepatic metastasis.
- *CEA lacks sensitivity as well as specificity, hence cannot be used to confirm the diagnosis.*

**2) Alpha-feto protein (AFP)**

- It is a glycoprotein synthesized normally early in fetal life by yolk sac, fetal liver and fetal GIT. *It is structurally and genetically related to albumin.*
- AFP is raised in *liver cancer (hepatocellular carcinoma), lung carcinoma, pancreatic carcinoma, colon carcinoma,* and *non-seminoma germ cell tumor of testis/ovary* (yolk sac

tumor/endodermal sinus tumor, *embryonal carcinoma, teratoma).*

- AFP is also raised in some non-neoplastic conditions like *cirrhosis, hepatitis, and pregnancy.*

**3) Human chorionic gonadotropin (HCG)**

- It is a placental hormone synthesized by syncytiotrophoblasts. It is glycoprotein with two subunits (dimer) : *a-subunit and /3-subunit. But only the P subunit of HCG is typically measured as a tumour marker because of specificity of the* 13 *subunit.* The i3 subunit of HCG has unique sequences that are not shared with other human glycoprotein hormones.
- It is detected by radioimmunoassay using antibodies to the 13 chain. a-HCG is not used as tumour marker because a unit of the FSH, LH and TSH are identical. So there can be cross reactivity between a subunits of these hormone. That is why in case of testicular tumours the patients also undergo simultaneous assay of LH to be certain that the marker detected is 13 HCG.
- HCG (13-HCG) is raised in *gestational trophoblastic disease (hydatidiform moles), gonadal germ cell tumor (embryonal carcinoma, choriocarcinoma), and pregnancy.*

**4) CA-125**

- Most important cancer with elevated CA-125 is *epithelial ovarian cancer.* CA-125 is also elevated in cancers of *endometrium, cervix,* fallopian tubes, pancreas, breast, lung and colon.
- Non-neoplastic conditions causing elevation of CA-125 are pregnancy, mensturation, *endometriosis,* PID, *abdominal TB,* peritonitis and uterine fibroid.

**Tumor markers for testicular/ovarian tumor**

1. *AFP (alpha-feto protein) : Teratoma, Yolk sac tumor (endodermal sinus tumor),* embryonal carcinoma.
2. *HCG (human chorionic gonadotrophin):* Choriocarcinoma, embryonal carcinoma.
3. *a,-antitrypsin :* Yolk sac tumor (endodermal sinus tumor).
4. *Placental alkaline phosphatase : Seminoma.*
5. *Other :* Placental lactogen, *LDH.*

## 432. Carcinoembryonic antigen is raised in which of the following non neoplastic conditions -

a) Hepatitis

b) Pancreatitis

c) Hemolytic anemia

d) Ulcerative colitis

Correct Answer - B
Ans. is 'b' i.e., Pancreatitis
*1) Neoplastic conditions with raised CEA* —> Colorectal cancer, lung cancer, breast cancer, ovarian cancer.
*2) Non-neoplastic conditions with raised CEA* —> Alcoholic cirrhosis, hepatitis, IBD (UC, CD), smoking, pancreatitis and hemolytic anemia.

## 433. Alpha-fetoprotein is a tumor marker for

a) Hepato cellular carcinoma

b) Multiple myeloma

c) Seminoma

d) Breast carcinoma

Correct Answer - A
Answer- A. Hepato cellular carcinoma
**Alpha-feto protein (AFP)**

- AFP is a well estabilished tumor marker
- It is a glycoprofein synthesized normaily early in fetal life by the yolk sac, fetal liver and fetal GIT.

**AFP is raised in -**

- Carcinomas > Liver Ca, Lung Ca, Colon Ca, Pancreatic Ca, Non-seminoma germ cell tumor of testis.
- Non-neoplastic conditions > Cirrhosis, Hepatitis, Pregnancy

## 434. Inhibin is tumor marker for ?

a) Granulosa cell tumor

b) Malignant melanoma

c) Prolactinoma

d) Breast carcinoma

Correct Answer - A
Ans. is 'a' i.e., Granulosa cell tumor

- Granulosa cell tumor is positive for vimentin, inhibin, CD99.

## 435. Mesothelioma is positive for which intermediate filament

a) Vimentin

b) Cytokeratin

c) GFAP

d) Desmin

Correct Answer - B
**Answer- B. Cytokeratin**
Cytokeratin- Carcinoma, mesothelioma, Non-seminoma GCT

## 436. Calretinin is used in

a) Mesothelioma

b) Hamartoma

c) Choristoma

d) Chordoma

Correct Answer - A
**Answer- A. Mesothelioma**
Calretinin and cytokeratin are positive in cases of malignant mesothelioma.

## 437. Marker of angiosarcoma is

a) CD 31

b) Cytokeratin

c) Vimentin

d) CD 55

Correct Answer - A
**Answer- A. CD 31**
The endothelial origin of these tumors can be demonstrated by immunohistochemical staining for CD31 or von Willebrand factor.

## 438. Keratinization and pearl formation is characteristic of

a) Squamous cell carcinoma

b) Basal cell carcinoma

c) Melanoma

d) Lymphoma

Correct Answer - A
**Answer- A. Squamous cell carcinoma**
Histologically, squamous cell carcinoma is characterized by the presence of keratinization and/or intercellular bridges. Keratinization may take the form of squamous pearls or individual cells with markedly eosinophilic dense cytoplasm

## 439. Grade of tumor denotes

a) Degree of differentiation

b) Degree of anaplasia

c) Stage of disease

d) Vascular invasion

Correct Answer - A
**Answer- A. Degree of differentiation**
Grading is based on the degree of differentiation of tumor cells and the number of mitosis within the tumor.

## 440. Carcinoma due to inherited mutation of p53 protooncogene

a) Li fraumeni syndrome

b) Familial adenomatous polyposis

c) Retinoblastoma

d) Osteosarcoma

Correct Answer - A
**Answer- A. Li fraumeni syndrome**
Li-Fraumeni syndrome is due to mutation in p-53 gene.

## 441. BRCA2 not associated with

a) breast cancer

b) Prostate cancer

c) Ovarian cancer

d) Vulval cancer

Correct Answer - D
Ans. is 'd' i.e., Vulval cancer

- *BRCA-1 er BRCA-2 are commonly associated with* —> Carcinomas of ovary and breast.
- *Less commonly BRAC-2 is also associated with* —> Carcinomas of colon, prostate and pancreas.

*[Ref Robbin's Vie p. 1076; Clinical Surgery by Michal M. Henry & Jeremy N. Thompson 2"a/e p. 453]*

## 442. Modified Bloom Richardson criteria for Carcinoma Breast includes -

a) Desmoplasia

b) Lymphovenous embolism

c) Mitotic rate

d) All

Correct Answer - C
Ans. is 'c' i.e. mitotic rate
Grading of breast cancer
o Presently, most methods for grading use the previously cited three-tiered systems for describing tumor structure in terms of *tubule formation, nuclear grade* and *mitotic count,* with the latter usually expressed as the number of mitosis per 10 high- magnification field.
o Each element is scored on a scale from 1 to 3 according to criteria of the specific grading system, and the final grade is determined by the sum of mitosis.
o Totals of 3 to 5 indicate a well-differentiated or low-grade tumor; 6 to 7, a moderately differentiated or intermediate-grade tumor; and 8 to 9 , a poorly differentiated or high-grade tumor.
o This method of scoring is known as the *Nottingham combined histologic grade of Elston-Ellis modification of the Scarff-Bloom-Richardson grading system, often reported as a modified Scaff-Bloom-Richardson grade.*
Modified Bloom-Richarson histological grading Tubule formation
o Score 1 :- >75% of tumor has tubules
- Score 2 :- 10-75% of tumor has tubules
o Score 3 :- < 10% of tumor has tubules
Nuclear size ( nuclear polymorphism)

o Score 1 :- tumor nuclei similar to normal duct nuclei (2-3 x RBC)

- Score 2 :- Intermediate size nuclei
- Score 3 :- very large nuclei, usually vesicular with prominent nucleoli

Mitotic count

o Score 1 :- 0-7 mitosis o Score 2 :- 8-14 mitosis o Score 3 :- > 15 mitosis

## 443. Excessive fibrosis in tumor in called -

a) Anaplasia

b) Metaplasia

c) Desmoplasia

d) Dysplasia

Correct Answer - C
Ans. is 'c' i.e., Desmoplasia

- In some tumors, parenchymal cells stimulate the formation of an *abundant collagenous stroma,* referred to as desmoplasia, eg *scirrhous carcinoma of breast.*

## 444. K ras mutation is seen in

a) Pancreatic carcinoma

b) Prostate carcinoma

c) Gastric carcinoma

d) Hepatic carcinoma

Correct Answer - A
**Answer- A. Pancreatic carcinoma**
K - RAS point mutation : Cancers of colon, lung and Pancreas.
H - RAS point mutation : Cancers of kidney and bladder
N - RAS point mutation : Melanoma and hematological malignancies
[Ref Robbin's 8thie p. 279 & 7h/e p. 295]

## 445. Sentinel lymph node biopsy is used for ?

a) Melanoma

b) Basal cell carcinoma

c) Squamous cell carcionoma

d) Thyroid carcinoma

Correct Answer - A
Ans. is 'a' i.e., Melanoma
Sentinel lymph node biopsy is used for breast carcinoma and melanoma.

## 446. Point mutaton in which protooncogene is responsible for the development of gastrointestinal stromal tumor

a) KIT

b) ALK

c) RET

d) FLT3

Correct Answer - A
Ans. is 'a' i.e., KIT

- Approximately 75% to 80% of all GISTs have oncogenic, gain-of-function mutations of gene encoding the *tyrosine kinase c-KIT.*
- Approximately 8% of GISTs have mutations that activate a related tyrosine kinase, *platelet derived growth factor receptor* a *(PDGFRA).*
- Consitutively active c-KIT or PDGFRA receptor tyrosine kinases activate RAS *and P13K/AKT pathways* and thereby promote tumor cell proliferation.

## 447. Paraneoplastic syndrome Hypercalcemia of malignancy, is produced due to ectopic production of which hormone by lymphomas ?

a) PTHrP

b) 1,25 dihydroxyvitamin D

c) PGE2

d) Parathormone

Correct Answer - B
Ans. is 'b' i.e., 1, 25 dihydroxyvitamin D
Parathyroid hormone-related protein (PTHrP)

1,25 dihydroxyvitamin D
Parathyroid hormone (PTH) (rare) Prostaglandin E2 (PGE2) (rare)

## 448. DIC is seen in all except

a) Carcinoma pancreas

b) Carcinoma prostate

c) Carcinoma lung

d) Carcinoma kidney

Correct Answer - D
**Answer- D. Carcinoma kidney**
**Cancers associated with DIC**

- Ca pancreas
- Ca lung
- Acute promyelocytic leukemia
- Ca prostate
- Ca Stomach

**449. The phenomenon by which the cancer cells are able to sustain and proliferate under adverse conditions of hypoxia is ?**

a) Warburg

b) Wanton

c) Wormian

d) Wolf

Correct Answer - A
Ans. is 'a' i.e., Warburg
Otto Warburg described the bioenergetics and metabolic features that permit cancer cells to survive under adverse conditions such as hypoxia and enable their proliferation, progression, invasiveness, and subsequent distant metastasis.
This phenomenon is thus called the growth promoting Warburg phenomenon.

## 450. Ladder tears are ?

a) Spiral tears of aortic intima

b) Vertical tears of aortic intima

c) Horizontal tears of aortic intima

d) Oblique tears of aortic intima

Correct Answer - C

Ans. is 'c' i.e., Horizontal tears of aortic intima

- *Ladder tears are the horizontal tears of intima*
- It is injury to aorta due to deceleration.
- It is so called be cause it resembles the rungs of a ladder.

## 451. Hepatitis B associated with ?

a) Wegener's granulomatosis

b) Systemic lupus erythmatosus

c) Polyarteritis nodosa

d) Sjogren syndrome

Correct Answer - C
Ans. is 'c' i.e., Polyatrteritis nodosa
The hepatitis B surface antigen is present in 25% of patients with Polyarteritis Nodosa.
Hepatitis C antibody is present in patients with essential mixed cryoglobinuria and rarely in patients with poly arteritis nodosa.

## 452. pANCA positive vasculitis is

a) Wegener's granulomatosis

b) Churg - Strauss syndrome

c) Polyarteritis nodosa

d) All of the above

Correct Answer - B
**Answer- b. Churg - Strauss syndrome**
**PANCA**
**Typically found in:**

- Microscopicpolyangiitis
- Churg-Strausssyndrome
- Idiopathiccrescenticglomerulonephritis
- Goodpasteur'ssyndrome.
- pANCA's are also associated with certain non-vasculitic entities such as certain rheumatic and nonrheumatic autoimmune diseases, Inflammatory bowel diseases, certain drugs. Infections such as endocarditis and bacterial airway infection in patients with cystic fibrosis

## 453. Patient with chronic hypertension will show following changes on histology of kidney

a) Hyaline arteriosclerosis

b) Hyperplastic arteriosclerosis

c) Onion skin lesions

d) Vessel lumen dilatation

Correct Answer - A

**Ans. is 'a' i.e., Hyaline arteriosclerosis**

Hypertension is associated with two forms of *small blood vessels* disease ?

**1. Hyaline arteriolosclerosis**

- There is homogenous, pink, hyaline thickening of arteriolar wall. The lumen becomes narrow. It is characteristic of benign hypertension. It may also occur in diabetes and aging.

**2. Hyperplastic arteriosclerosis**

- It is characteristic of malignant hypertension. There is concentrentic, laminated thickening of arteriolar wall → onion skinning. There is mucinous intimal thickening and fibrous intimal thickening.
- There may be accompanied fibrinoid deposits with necrosis of the vessels wall → fibrinoid necrosis (or necrotizing arteriolitis).
- *Favoured sites for hyperplastic arteriosclerosis are kidney, small intestine, gall bladder, peripancreatic fat, and periadrenal fat.*
- Beside these hypertension also causes :-

1. Atherosclerosis in large arteries.
2. Degenerative changes in the walls of large and medium arteries that potentiate both aortic dissection and cerebrovascular hemorrhage.

## 454. Histologic finding in hyperplastic arteriosclerosis

a) Concentric layer onion skin lesion

b) Mucinous intimal thickening

c) Fibrinoid atherosclerosis

d) All the above

Correct Answer - D
**Answer- D. All the above**
It is characteristic of malignant hypertension.
There is concentrentic, laminated thickening of arteriolar wall onion skinning.
There is mucinous intimal thickening and fibrous intimal thickening.
There may be accompanied fibrinoid deposits with necrosis of the vessels wall fibrinoid necrosis.

## 455. Obliterative endarteritis of the vasa vasorum of aorta is seen in

a) Syphilis

b) Wegener's

c) Chrug strauss

d) Cold hemoglobinuria

Correct Answer - A
**Answer- A. Syphilis**
Syphilitic aneurysm is due to obliterative endarteritis that involves vaso vasorum of aorta in the tertiary stage of syphilis.

## 456. Antischkow cells are ?

a) Modified macrophages

b) Modified neutrophils

c) Modified B cells

d) Modified RBCs

Correct Answer - A
**Ans. is 'a' i.e., Modified macrophages**
**<u>Pathologic Features of Acute Rheumatic Fever</u>**
Aschoff bodies focal inflammatory lesions seen in acute rheumatic fever consisting of foci of T lymphocytes, occasional plasma cells, and plump activated macrophages.
These activated macrophages called Anitschkow cells (pathognomonic for Rheumatic Fever) have abundant cytoplasm and central round-to- ovoid nuclei (occasionally binucleate) in which the chromatin condenses into a central, slender, wavy ribbon (hence also called "caterpillar cells").
Pancarditis - During acute RF, diffuse inflammation and Aschoff bodies may be found in any of the three layers of the heart, resulting in pericarditis, myocarditis, or endocarditis
Verrucae are small (1 to 2 mm) vegetations overlying necrotic foci and along the lines of closure of valves. o MacCallum plaques are irregularly thickened subendocardial lesions usually in the left atrium. o Mitral stenosis - Fish Mouth or Button - Hole stenosis.

## 457. Which isoenzyme of LDH is seen in heart

a) LDH1

b) LDH2

c) LDH3

d) LDH4

Correct Answer - A
**Answer- A. LDH1**
Most prominent isoenzymed in heart muscle is LDH-1. LDH-2 is 2nd most prominent form (after LDH 1)

## 458. Which worm causes myocarditis ?

a) Trichuris

b) Trichinella

c) Enterobius

d) Strogyloides

Correct Answer - B
Ans. is 'b' i.e., Trichinella

- *Trichinosis is the most common helminthic disease causing myocarditis.*

## 459. Carcinoid syndrome produces valvular disease primarily of the

a) Venous valves

b) Tricuspid valve

c) Mitral valve

d) Aortic valve

Correct Answer - B
Answer is B (Tricuspid valve);
*The most common site of involvement is the – Ventricular surface of Tricuspid valve.*
*'Cardiac manifestations in carcinoid syndrome are due to fibrosis involving the endocardium, primarily on the right side although left side lesions also occur. Dense fibrous deposits are most commonly on the ventricular aspect of the tricuspid valve and less commonly on the pulmonary valve cusps.'*
**They can result in either constriction of valves (stenosis) or fixation of valves in open (regurgitation)**
- Abnormality produced due to tricuspid valve involvement – Tricuspid regurgitation Q
- Abnormality produced due to pulmonary valve involvement – Pulmonary stenosis Q

## 460. Which of the following is not a large vessel vasculitiis ?

a) Takayasu arteritis

b) Cogan syndrome

c) Chrug strauss syndrome

d) Giant cell arteritis

Correct Answer - C
Ans. is 'c' i.e., Churg strauss syndrome

- *Large vessel vasculitis :* Giant cell arteritis (temporal arteritis), Takayasu arteritis, Cogan syndrome.
- *Medium vessel vasculitis :* PAN (classical PAN), kawasaki disease, Buerger's disease.
  - *Small vessel vasculitis :* HSP, Wegner's granulomatosis, microscopic polyangitis, churg strauss syndrome, Cryoglobulinemia, SLE, idiopathic crescentic glomerulonephritis, Bechet's syndrome, renal limited vasculitis.

## 461. Most common site of glomus tumor is ?

a) Under fingernails

b) Under toenails

c) Neck

d) Axilla

Correct Answer - A
Ans. is 'a' i.e., Under fingernails
Glomus tumor (Glomangioma)

- Benign tumor arising from the smooth muscle cells of the glomus body which is an arteriovenous anastomosis involved in thermoregulation.
- Most commonly present in the distal portion of the digits (under fingernails).
- Histologically, there is presence of branching vascular channels and stroma containing nests/aggregates of glomus cells arranged around vessels.

## 462. Most common type of hodgkins lymphoma is ?

a) Lymphocyte predominant

b) Lymphocyte depletion

c) Nodular sclerosis

d) Mixed cellularity

Correct Answer - C
Ans. is 'c' i.e., Nodular sclerosis

- Best Prognosis
- Worst prognosis
- Most common HL
- Most common type HL in India
- Least common type HL

Lymphocytic predominance type. —> Lymphocytic depletion type. —> Nodular sclerosis type.
—> Mixed cellularity type. Lymphocytic depletion type

## 463. Lacunar type of reed sternberg cell is seen in ?

a) Nodular sclerosis

b) Lymphocyte predominance

c) Mixed cellularity

d) Lymphocyte depletion

Correct Answer - A
Ans. is 'a' i.e., Nodular sclerosis

## 464. Popcorn cells are seen in which variety of hodgkin's disease ?

a) Nodular sclerosis

b) Mixed cellularity

c) Lymphocyte predominant

d) Lymphocyte depletion

Correct Answer - C
Ans. is 'c' i.e., Lymphocyte predominant
Popcorn cells are found in lymphocytic predominant type of Hodgkin's Lymphoma.

## 465. Birbeck granules in cytoplasm is seen in ?

a) Langerhans cell histiocytosis

b) Hodgkin's lymphoma

c) Non hodgkins lymphoma

d) Gastrointestinal stromal tumor

Correct Answer - A
Ans. is 'a' i.e., Langerhans cell histiocytosis
Birbeck granules are characteristic of langerhans cell histiocytosis
*Tumour cells in the langerhan's cell histiocvtosis are derived from dendritic cells and express* :

- S-100
- CD1a
- HLA-DR
- *These cells are characterized by the presence of birbeck granules in their cytoplasm unde rthe electron microscope, Birbeck granules have pentalaminar, rodlike tuular appearance and sometimes a dilated terminal end* (tennis-racket appearance)

## 466. Shape of birbeck granules is ?

a) Tennis racket

b) Hockey stick

c) Bat

d) Ball

Correct Answer - A
Ans. is 'a' i.e., Tennis racket
Under the electron microscope, Birbeck granules have a pentalaminar, rodlike, tubular appearance and sometimes a dilated terminal end resembling *tennis-racket appearance.*

## 467. Most common site for eosinophilic granuloma is?

a) Radius

b) Skull

c) Lumbar vertebra

d) Femur

Correct Answer - B
Ans. is 'b' i.e., Skull
The most common sites are skull bones, long bones, spinal vertebrae, mastoid and mandible.

## 468. Pelger Huet anamoly shows presence of ?

a) Hyposegmented neutrophil

b) Hypersegmented neutrophil

c) Unsegmented neutrophil

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Hyposegmented neutrophil**

**<u>Pelger Huet anomaly</u>**

- It is a genetic disorder with an autosomal dominant inheritance pattern.
- It is a blood laminopathy associated with the lamin B receptor.
- It is characterized by a white blood cell type known as a neutrophil whose nucleus is hyposegmented.
- Heterozygotes are clinically normal, although their neutrophils may be mistaken for immature cells, which may cause mistreatment in a clinical setting.
- Homozygotes tend to have neutrophils with rounded nuclei that do have some functional problems.

## 469. MALToma is located in which layer of gastrointestinal tract

a) Lamina propria

b) Submucosa

c) Muscularispropria

d) Serosa

Correct Answer - A
**Answer- A. Lamina propria**
Extranodal marginal zone lymphoma or mucosa-associated lymphoid tissue lymphoma (MALToma).
It is the most common form of marginal zone lymphoma. MALT lymphoma (MALToma) is divided into gastric (arising in stomach) and non-gastric (arising in small intestine, salivary gland, thyroid etc). Gastric MALToma has been associated with H.pylori infection.
Immunophenotype of MALTomas shows positivity for CD 20 and CD 23. They are negative for CD 3, CD 10 and CD 5.
Histologically, MALToma takes form of a dense lymphocytic infiltrate in the lamina propria layer of GIT.

## 470. True about gastric lymphoma -

a) Non Hodgkins lymphoma commonest variety

b) Diagnosis is made by biopsy

c) H-Pylori has direct relationship

d) All

Correct Answer - D
Ans. is 'a' i.e., Non Hodgkins lymphoma commonest variety; 'b' i.e., Diagnosis is made by biopsy; `c' i.e., H-Pylori has direct relationship
Gastric lymphoma

- *The stomach is the most common site for extranodal lymphoma.*
o Nearly all gastric lymphomas are *B-cell lymphomas of mucosa-associated lymphoid tissue (MALT lymphoma)* o Majority of cases (80%) are associated with *chronic gastritis and H. Pylori infection.*
o The most striking evidence linking H. Pylori gastritis to MALToma is that eradication of infection by antibiotics induces durable remission with low rate of recurrence.
**o** Gastric lymphoma represents 5% of all gastric malignancies.
- It is most prevalent is *sixth decade* of life.
o Like other tumors of mature B cells, MALTomas express B-cell markers *CD 19 and CD 20.* They do not express CD 5, CD 10 and CD 23.
*o Diagnosis is made by endoscopic biopsy.*
o Gastric lymphomas are *chemosensitive* and chemotherapy alone or along with surgery is used for the treatment of gastric lymphoma.
About option 'a'
o Most common variety of gastric lymphoma is NHL (MALToma). Very rarely, Hodgkin's lymphoma may also occur in stomach.

## 471. Which of the following is not true about idiopathic thrombocytopenic purpura?

a) Antibodies of IgM class

b) Autoantibodies to Gp IIb/ Ilia or IB IX

c) Increased megakaryocytes in bone marrow

d) Spleen is normal in size

Correct Answer - A

**Ans. is 'a' i.e., Antibodies of IgM class**

**I dopathic thrombocytopenic purpura :?**

- There are two clinical subtypes of primary I.T.P, *acute* and *chronic* both are *autoimmune disorders in which platelet destruction results from formation of antiplatelet antibodies.*

**Pathogenesis**

- *Chronic ITP is caused by the formation of autoantibodies against platelet membrane glycoproteins most often Hb-IIIa or Ib-IX.*
- In overwhelming majority of cases the antiplatelet antibodies are of the ¸IgL' class.
- The mechanism of platelet destruction is similar to that seen in autoimmune hemolytic anemias. Opsonized platelets are rendered susceptible to phagocytosis by the cells of the mononuclear phagocyte system.
- The *spleen* is the *major site* of the destruction of platelets.

**Pathology**

- The principal morphologic lesions of thrombocytopenic purpura are found in the *spleen* and *bone marrow* but they are not diagnostic.
- *The point to stress is that despite the increased destruction of platelets in spleen, the spleen size remains normal.*

- On *histological examination* there is congestion of the sinusoids and hyperactivity and enlargement of the splenic follicles manifested by the formation of prominent germinal centres. Sometimes scattered megakaryocytes are found within the sinuses and sinusoidal walls. This represents a very *mild* form of extramedullary hematopoiesis. These splenic findings are not sufficiently distinctive to be considered diagnostic.

**Bone Marrow**

- Bone marrow reveals a modestly increased number of megakaryocytes.
- These findings are *not specific* for autoimmune thrombocytopenic purpura, but merely reflect accelerated thrombopoiesis, being found in most forms of thrombocytopenia resulting from *increased platelet destruction.*
- *The importance of bone marrow examination is to rule out thrombocytopenias resulting from bone marrow failure.*
- A *decrease* in the number of megakaryocytes goes against the diagnosis of I.T.P.

## 472. Defect of glanzmann's thrombosthenia is ?

a) Gp1Ib-IIIa

b) GpIIIa-I lb

c) GpIIa-IIIb

d) Gpfilb-I la

Correct Answer - A
Ans. is 'a' i.e., GpI1b-IIIa

- *Defect in Glanzmann's trombsthenia* Gp IIb/IIIa
- *Defect in Bernard soulier syndrome* Gp Ib/IX

## 473. Giant platelets are seen in ?

a) Bernard soulier syndrome

b) vWD

c) Polycythemia rubra vera

d) Leukemia

Correct Answer - A
Ans. is 'a' i.e., Bernard soulier syndrome
**Bernad Soulier disease -** Defect in the platelet GpIb-IX complex
BT, mild thrombocytopenia, deficient or low levels of platelet GpIb-IX complex by flowcytometry
Ristocetin aggregation test is defective

## 474. PT is used to test ?

a) Extrinsic and common pathway

b) Intrinsic and common pathway

c) Intrinsic pathway

d) Extrinsic pathwa

Correct Answer - A
Ans. is 'a' i.e., Extrinsic and common pathway
Patients with hemophilia have deficiency of factor VIII that results in prolonged PTT.

## 475. Which of the following statements about coagulation factor VII is not true

a) Deficiency is inherited as an Autosomal Recessive trait

b) Deficiency is associated with prolonged APTT

c) Deficiency can be managed by Fresh Frozen plasma

d) Has a shorter half life in comparison to Hageman factor (XII)

Correct Answer - B

Answer is B (Deficiency is associated with prolonged APTT)

*Factor VII deficiency is associated with isolated prolongation of PT, APTT is normal in Factor VII deficiency*

**Genetic and laboratory characteristic of inherited coagulation disorders**

| Clotting factor deficiency | Inheritance | Prevalence in General Population | Laboratory Abnormality aPTI PT | | TT | Minimum Hemostatic le N els | Treatment |
|---|---|---|---|---|---|---|---|
| Fibrinogen | AR | I in 1.000,000 | + | + | + | 100 mg/dL | Cryoprecipi |
| Prothrombin | AR | I in 2.000,000 | + | + | | 20-30% | FFP/Pa's |
| Factor V | AR | 1 in 1.000,000 | +/- | +1- | | I *5-10"/a* | HP |
| Factor I II | AR | 1 in 500,000 | - | + | - | 15-20% | FFP/PCCs |
| Factor VIII | X-linked | I in 5.000 | + | - | | 30% | FAINT concentrate |
| Factor IX | X-linked | I in 30.000 | | | | 30% | FIX concen |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | + | - | - | | |
| Factor X | AR | I in 1.000,000 | +1- | +/- | - | 15-20% | FFP/PCICs |
| Factor XI | AR | I in 1,000,000 | | | | 15-20% | FFP |
| Factor XII | AR | 'SO | + | - | | h | h |
| HK | AR | ND | + | | | Ii | h |
| Prckallikrein | AR | ND | _, | | | 6 | h |
| Factor XIII | AR | I in 2,000,000 | | | +/- | 2-5% | Cryptopreci |

Values within n srmal range (-) or prolonged (±) No risk for bleeding, treatment is not indicated
HK, high-molecular weight kininogen; AR, autosomal recessive; aPTT, activated partial thromboplastin time; PT, prothrombin time; TT, thrombin time; ND, not determined; FFP. fresh frozen plasma; PCCs, prothrombin complex concentrates.

## 476. Under Blood safety programme compulsory tests done are all except ?

a) HIV

b) VDRL

c) Malaria

d) Hepatitis E

Correct Answer - D
**Ans. is 'd' i.e., Hepatitis E**
**<u>Blood safety</u> :?**

- Under Blood Safety Programme all the blood banks have to ensure that before transfusion of blood to the patient the mandatory tests for HIV, VDRL, Hepatitis B, Hepatitis C and Malaria are done.

## 477. Following statement is true for hemophilia patients?

a) All Females are carriers and all males are affected

b) All Males are carriers and all females are affected

c) Females are mostly carriers and all males are affected

d) Males are mostly carriers and all females are affected

Correct Answer - C
Ans. is 'c' i.e., Females are mostly carriers and all males are affected
Hemophilia is an X-linked recessive hemorrhagic disease due to mutations in the *F8* gene (hemophilia A or classic hemophilia) or *F9* gene (hemophilia B).
The disease affects I in 10,000 males worldwide, in all ethnic groups; hemophilia A represents 80% of all cases.
Male subjects are clinically affected; women, who carry a single mutated gene, are generally asymptomatic.
Family history of the disease is absent in 30% of cases and in these cases, 80% of the mothers are carriers of the de novo mutated allele.

## 478. Blood is stored at what temperature in blood bank?

a) -2 to -4 degrees Celsius

b) -2 to 0 degrees Celsius

c) 1 to 6 degrees Celsius

d) 6 to 12 degrees Celsius

Correct Answer - C
Ans. is 'c' i.e., 1 to 6 degrees Celsius

- *Storage temperature of blood :* 1-6°C
- *Storage temperature of packed RBCs :* 40°C
- *Storage temperature of FFP :* -20°C
- *Storage temperature of platelets:* 20-24°C

## 479. Normal reticulocyte count in newborn is -

a) 0 - 1%

b) 1 - 1.5%

c) 3 - 6%

d) 6 - 9 %

Correct Answer - C
Ans. is 'c' i.e., 3 - 6%
Normal reticulocyte count in adults is 1 - 1.5% and in newborns is 3 - 6 %

invalid question id

## 481. Loading dose depends on ?

a) Volume of distribution

b) Elimination rate

c) Half life

d) Plasma volume

Correct Answer - A
Ans. is 'a' i.e., Volume of distribution
*Loading dose* is governed by volume of distribution and *volume of distribution* is affected by *lipid solubility.*
*Maintenance dose* is governed by *clearance (excretion) of drug and half life.*

## 482. Maintainence dose is calculated by using value of?

a) Clearance

b) Volume of distribution

c) Oral bioavailability

d) Daily dosage

Correct Answer - A
**Ans. is 'a' i.e., Clearance**
**Drug dosing**

- For drugs with *longer t1/2* a dose that is sufficient to attain the target concentration after single administration, if repeated will accumulate according to plateau principal and produce toxicity later on.
- On the other hand, if the dosing is such as to attain target level at steady state, the therapeutic effect will be delayed by about 5 half lives and this lapse of time may be undesirable some time.
- Such drugs are often administered by initial *loading dose* and subsequent *maintenance doses.*
- Loading dose

## 483. Depot preparations are administered by ?

a) Subcutaneous route

b) Intravenous route

c) Intramuscular route

d) Both subcutaneous and intramuscular route

Correct Answer - D

**Ans. D. Both subcutaneous and intramuscular route**

- A depot injection is an injection, usually subcutaneous or intramuscular, of a pharmacological agent which releases its active compound in a consistent way over a long period of time.
- Depot injections are usually either solid or oil based.

## 484. Most variable absorption is seen with which route?

a) Oral

b) Intramscular

c) Intravenous

d) Per rectal

Correct Answer - A
Ans. is 'a' i.e., Oral

- *Oral administration of drugs is safe, convenient and economical, but has the potential for the most variable absorption pattern.*

Clinical pharmacology
**Routes of drug administration**
Drugs are administered by various routes.
Different routes have different characteristics, so that the route of administration may have a profound effect upon the speed and efficiency with which the drugs act.
**The routes of drug administration may be:**
i) Local route
ii) Systemic route
Local route - Drug is administered at the site of lesion.
Systemic route - Drug is administered through systemic routes is intended to be absorbed into the blood stream and distributed all over, including the site of action, through circulation.

## 485. About rectal route true is ?

a) Used for irritant and unpleasant drugs

b) Cannot be used in unconscious patient

c) There is predictable absorption of drug

d) Diazepam cannot be given via rectal route of administration

Correct Answer - A

Ans. is 'a' i.e., Used for irritant and unpleasant drugs

**Rectal route of administration**

- It is a route of systemic drug delivery.
- Irritant or unpleasant drugs can be put into the rectum as suppositories or retention enemas.
- Can be used in a patient with recurrent vomiting and in unconscious patient.
- Absorption of drug is slower, irregular and unpredictable.
- Drug absorbed into the external hemorrhoidal vein (50%) bypasses the liver but not that absorbed into the internal hemorrhoidal vein.
- Diazepam, indomethacin, ergotamine and paracetamol can be used via rectal route of administration.

## 486. Transdermal patch is not used for following drug?

a) GTN

b) Fentanyl

c) Nicotine

d) Naloxone

Correct Answer - D
Ans. is `d' i.e., Naloxone

## 487. Xenobiotics are metabolized to ?

a) Increase water solubility

b) Increase lipid solubility

c) Make them nonpolar

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Increase water solubility**

**BIOTRANSFORMATION (METABOLISM)**

- Most of the drugs are treated by the body as foreign substances (xenobiotics).
- Like other foreign substances (xenobiotics), body tries to eliminate drugs by various mechanisms for ridding itself of chemical intruders.
- *Biotransformation means chemical alteration of the drug in the body.*

Why drug transformation is necessary ?

- Kidney plays a pivotal role in terminating the activity of drugs.
- For renal excretion the drug tends to be polar (lipid insoluble/water soluble) so that it can not diffuse back from tubular lumen and can be excreted.
- But pharmacologically active organic molecules (drugs) tend to be lipophlic (nonpolar) and remains unionized or only partially ionized at physiological pH.
- Biotransformation is needed to render nonpolar (lipid soluble) compounds polar (water soluble) so that they are not reabsorbed in the renal tubules and are excreted.

**Sites and processes of biotransformation**

- *Primary site of drug metabolism is liver,* others are - kidney, intestine, lung and plasma.

**Biotransformation of drugs may lead to :-**

**Active metabolite from an active drug**

- Many drugs are partially converted to one or more active metabolites.
- The effects observed are the sumtotal of that due to the parent drug and its active metabolite.

**Activation of inactive drugs**

- Few drugs are inactive as such and need conversion in the body to one or more active metabolites.
- Such a drug is called *prodrug.*

## 488. Branch that deals with medicinal drugs obtained from plants and other natural resources -

a) Pharmacognosy

b) Pharmacogenetics

c) Pharmacogenomics

d) Pharmacopia

Correct Answer - A

**Ans. is 'a' i.e., Pharmacognosy**

- Pharmacognosy : It is the branch the deals with the knowledge pertaining to the medicinal drugs obtained from plants and other natural sources.
- Pharmacogenetics : Study of genetic basis for variability in drug response
- Pharmacogenomics : Use of genetic information to guide the choice of drug and dose on an individual basis.

## 489. Pharmacoviglance is used for ?

a) To monitor drug toxicity

b) To monitor unauthorized drug manufacture

c) Monitoring of students

d) Check costs

Correct Answer - A
Ans. is 'a' i.e., To monitor drug toxicity
**Pharmacovigilance**
Pharmacovigilance is the science and activities relating to detection, assessment, understanding and prevention of adverse effects or any other drug related problem.

## 490. False regarding Cytochrome P 450 is ?

a) They are essential for the production of cholesterols, steroids, prostacyclins and thromboxane A2

b) They absorb light with 45nm wavelength

c) They occur predominantly in liver

d) They are non heme proteins

Correct Answer - D

**Ans. is d i.e., They are non heme proteins**

**CYTOCHROME P450**

- They CYP450 are essential for the production of cholesterols, steroids, prostacyclins and thromboxane A2.
- They are also essential for the metabolism of foreign chemicals and detoxification of drugs.
- CYP 450 enzymes are so named because they are bound to membranes within a cell (cyto) and contain a heme pigment (chrome and P) that absorbs light at a wavelength of 450 nm when exposed to carbon monoxide.
- There are more than 50 CYP450 enzymes, but the CYP1A2, CYP2C9, CYP2C19, CYP2D6, CYP3A4, and CYP3A5 enzymes metabolize 90 percent of drugs.

## 491. Glucuronidation takes place in ?

a) Liver

b) RBC

c) Pancreas

d) Thyroid

Correct Answer - A
**Ans. is 'a' i.e., Liver**
**GLUCURONIDATION**

- This is the most important synthetic reaction carried out by a group of UDP-glucuronosyl transferases (UGTs).
- Glucuronidation occurs mainly in the liver, although the enzyme responsible for its catalysis, UDP?glucuronyltransferase, has been found in all major body organs (e.g., intestine, kidneys, brain, adrenal gland, spleen, and thymus).
- Compounds with a hydroxyl or carboxylic acid group are easily conjugated with glucuronic acid which is derived from glucose.
- Examples are- chloramphenicol, aspirin, paracetamol, lorazepam, morphine, metronidazole.
- Not only drugs but endogenous substrates like bilirubin, steroidal hormones and thyroxine utilize this pathway.
- Glucuronidation increases the molecular weight of the drug which favours its excretion in bile.
- Drug glucuronides excreted in bile can be hydrolysed bybacteria in the gut-the liberated drug is reabsorbed and undergoes the same fate. This enterohepatic cycling of the drug prolongs its action, e.g. phenolphthalein, oral contraceptives.

## 492. Counterfeit drug is ?

a) Fake medicine

b) Contains the wrong ingredient

c) They have active ingredient in wrong dose

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above
Counterfeit medicine is fake medicine.
It may be contaminated or contain the wrong or no active ingredient.
They could have the right active ingredient but at the wrong dose.
Counterfeit drugs are illegal and may be harmful to your health.

**493. Young child weighing 20 kg was given a drug in the dose 100mg/kg body weight. The plasma concentration of the drug is 2mg/ dl and the clearance is 200 ml/hr. What is the time required to reach steady state plasma concentration -**

a) 10 hrs

b) 20hrs

c) 30hrs

d) 40hrs

Correct Answer - B
Ans. is 'b' i.e., 20 hours
Volume of distribution = total dose/plasma concentration
Total dose= dose/ kg x body weight = 100 x 20 = 2000 mg
Volume of distribution = 2000/2 = 1000
Half life = 0·693 x Volume of distribution/ clearance = 0·693 x 1000/200 = 3·5 hours
Time required to reach steady state plasma concentration is 5·5 half lives = 5·5 x 3·5 = 19·25 hours
Therefore the most appropriate answer is 20 hours.

## 494. If Vmax dec to 80% due to an inhibitor and Km is same as before which is the type of inhibition?

a) Competitive Equilibrium type

b) Non competitive

c) Competitive Non Equilibrium type

d) None of the above

Correct Answer - B

**Ans. B. Non competitive**

- Decrease in Vmax with no change in Km is seen in Non-competitive inhibition.

## 495. Plasma protein bound drug distributed in which compartment ?

a) Extracellular

b) Intravascular

c) Interstitial

d) Extravascular

Correct Answer - B

**Ans. is 'b' i.e., Intravascular**

**Clinical significance of protein binding:**

1. High plasma protein bound drugs are largely restricted to the vascular compartment and tend to have lower volume of distribution.
2. The bound fraction is not available for action.
3. High degree of protein binding generally makes the drug long acting, because bound fraction is not available for metabolism or excretion, unless it is actively excreted by liver or kidney tubules.
4. 1n *nephrotic syndrome and other conditions causing hypoproteinemia, protein binding will be altered.* 5.Highly protein bound drugs are not removed by haemodialysis and need special techniques for treatment of poisoning.
5. Protein bound drugs can give rise to displacement interactions :
6. In hypoalbuminemia, binding may be reduced and high concentrations of free drug may be attained, e.g. phenytoin and furasemide.

## 496. Following are the advantages of sustained release preparation over the conventional preparations except ?

a) Decreased frequency of administration

b) Improved compliance

c) Less incidence of high peak side effects

d) Drugs with half life > 4 hours are suitable

Correct Answer - D

Ans. is 'd' i.e., Drugs with half life > 4 hours are suitable

- **Acts for a longer period.**
- Frequency of administration is reduced -more convenient.
- Improved patient compliance - a single morning dose is less likely to be forgotten/omitted than a 6 or 8 hourly regimen; a monthly or quarterly administered contraceptive over one that has to be taken daily.
- Large fluctuations in plasma concentration are avoided.
- Side effects related to high peak plama level just after a dose (e.g. nifedipine) would be minimized.
- Better round-the-clock control of blood sugar, etc.
- Drug effect could be maintained overnight without disturbing sleep, e.g. antiasthmatics, anticonvulsants, etc.

**497. Which antiepileptic drug is least secreted in breast milk ?**

a) Ethosuximide

b) Clonazepam

c) Gabapentin

d) Carbamazepine

Correct Answer - B
Ans. is 'b' i.e., Clonazepam

## 498. Agonist antagonist combination acting on the same receptor is ?

a) Isoprenaline and propranolol

b) Adrenaline and histamine

c) Salbutamol and leukotriene

d) Estrogen and tamoxifen

Correct Answer - A
Ans. is 'a' i.e., Isoprenaline and propranolol
Receptor antagonists (Pharmalogical antagonists)
Receptor antagonists are those drugs that blocks the action of agonist by acting on same receptors. Example:
*Isoprenalineis* $\beta_1$ and $\beta_2$ receptor agonist while *propranolol* has antagonistic action on $\beta_1$ and $\beta_2$ receptors.

**Note :**
Physiological antagonists
Physiological antagonists are those that produce opposite action by acting on different receptors.

**Example**

1. *Histamine* causes bronchoconstriction via $H_1$receptors and this action is antagonized by *adrenaline* which causes bronchodilodation through $\beta_1$ receptors
2. *Leukotrienes* cause bronchoconstriction via cystinyl leukotriene receptors and this action is antagonised by *salbutamol* which causes bronchodilatation through $\beta_2$ receptors.

**499. Which of the following drug substrate combinations do not match ?**

a) CYP 3A4/5 - simvastatin

b) CYP 2D6 - SSRI

c) CYP 2C8/9 - mifepristone

d) CYP 2C19 - propranolol

Correct Answer - C
Ans. is 'c' i.e., CYP 2C8/9 - mifepristone

## 500. Approximate dose of drug in a 5 years old child ?

a) Same as adult dose

b) 1/2 of adult dose

c) $^{1}/3$ of adult dose

d) 'A of adult dose

Correct Answer - C

**Ans. C. $^{1}/3$ of adult dose**

**There are three rule's by which drug close in children can calculated by:**

1. For children 2 years old and older (Young's rule)
2. For infant and children < 2 years (Fried's rule)
3. Child's dose by weight can be calculated by Clark's rule:

- Child's dose = [Weight (1b)/150] * adult dose.

**501. A drug having 40% absorption and hepatic extraction ratio of 0.6. What is the bioavailability of that drug?**

a) 16%

b) 24%

c) 20%

d) 28%

Correct Answer - A

**Ans. is 'a' i.e., 16%**

Absortion of drug is 40% i. e. if 100 mg of drug is taken 40 mg will be absorbed.

Hepatic extraction ratio is 0.6 i.e. out of the absorbed dose 60% will be removed by liver; so from the absorbed 40 mg 60% removed i. e. 24 mg removed.

Thus finally the remaining 16 mg of the total dose taken reaches the systemic circulation. So bioavailability is 16% as 16mg of the total 100 mg finally reached the systemic circulation

## 502. Essential drugs ?

a) Included in national pharmacopoeia

b) Should always be present at PHC

c) Those that satisfy the primary health care needs of the population

d) Life saving medications

Correct Answer - C
Ans. is 'c' i.e., Those that satisfy the primary health care needs of the population

- WHO has defined Essential Medications as those that satisy the priority health care needs of majority of the population.

## 503. Most common mitochondrial enzyme for metabolism detoxification reaction is ?

a) CYP 3A4

b) CYP 1A2

c) CYP 2A6

d) CYP 2B6

Correct Answer - A

**Ans. is 'a' i.e., CYP 3A4**

**Subtypes of cytochrome P-450**

- Depending upon the extent of amino acid sequence homology, the cytochrome P-450 (CYP) isoenzymes are grouped into families designated by capital letters (A, B, C ....).
- Individual isoenzymes are again alloted numerals (1, 2, 3 ....).
- Examples are CYP1A2, 2A6, 2B6, 2C8, 3A4/3A5.
- In human beings, only a few members of three isoenzyme families carry out metabolism of most of the drugs.
- *Cyp 3 A 4/5 carryout biotransformation of largest number (nearly 50%) of drugs.*

**Important inducers of CYP 3A4/3A5**

- Barbiturates
- Glucocorticoids
- Rifampin
- Macrolide antibiotics
- Carbamazepine
- Phenytoin
- Pioglitazone

**504. Cholinergic drug which acts on heart by decrease in levels of cAMP and due to opening of K+ channels is?**

a) Methacholine

b) Oxotremorine

c) Bethanechol

d) DMPP

Correct Answer - A
Ans. 'a' i.e., Methocholine

## 505. Function of $M_2$ receptor in heart ?

a) SA node hyperpolarisation

b) AV node increased velocity of conduction

c) Increased contractility of ventricles

d) Increased Ach release from cholinergic nerve endings

Correct Answer - A
Ans. is 'a' i.e., SA node hyperpolarization

**506. Dopamine at 1-2 Microgram/ Kg/ min produces?**

a) Renal vasodilatation

b) Positive ionotropic effect

c) Mesenteric vasoconstriction

d) Generalised vasoconstriction

Correct Answer - A

**Ans. is 'a' i.e., Renal vasodilatation**

**Dopamine produces dose-dependent action:**

- At *low dose (1-2 µg/kg/min)* causes dilation of renal and mesenteric vessels → often referred to as *renal dose.*
- At *moderately high dose (2-10 µg/kg/min)* produces a positive ionotropic effect by stimulating $\beta_1$ receptor on heart → *cardiac dose.*
- At *high doses (> 10 µg/kg/min)* produces vasoconstriction by stimulating $\alpha_1$ receptors → *vascular dose.*

## 507. Most commonly used cholinesterase regenerator at NM junction is ?

a) Pralidoxime

b) Obidxime

c) Diacetyl monoxime

d) Edrophonium

Correct Answer - A

**Ans. is 'a' i.e., Pralidoxime**

Pralidoxime is most commonly used cholinesterase reactivater.

**OXIMES**

- *Oximes Pralidoxime 2-PAM, obidoxime and diacetyl-monoxime (DAM)] are used in organophosphate poisoning.* o *Oximes acts by reactivating cholinesterase enzyme.*
- Mechanism of action
- In organophosphate poisoning esteratic site of cholinesterase is phosphorylated and anionic site is free.
- Phosphorylated cholinesterase reacts very slowly with water.
- However, if more reactive OH groups in the form of oximes are provided, reactivation occurs more than a million time faster.
- Oximes attach to anionic site and provide more reactive OH groups.
- *Oximes are ineffective in Carbamates poisoning.*
- Pralidoxime is contraindicated in carbamates poisoning, because not only it does not reactivate carbamylated enzyme, it has weak anti-chE activity of its own.

**Remember**

- Obidoxime is more potent than pralidoxime.
- Pralidoxime and obidoxime are lipid insoluble, *while diacetyl-monoxime (DAM) is lipid soluble so it can cross BBB and regenerate*

*AChE in brain.*

- *Atropine is used in both organophosphate and carbamate anticholinesterase poisoning.*

## 508. Selective beta 2 blocker is ?

a) Butoxamine

b) Betoxolol

c) Esmolol

d) Bisoprolol

Correct Answer - A
Ans. is 'a' i.e., Butoxamine

## 509. Beta blocker with membrane stabilizing property are all except ?

a) Acebutolol

b) Betaxolol

c) Carvedilol

d) Bevantolol

Correct Answer - D
Ans. is 'd' i.e., Bevantolol

## 510. Longest acting beta blokeris ?

a) Nodalol

b) Esmolol

c) Carvedilol

d) Acebnolol

Correct Answer - A
Ans. is 'a' i.e., Nodalol
Nodalol is longest acting β-blocker.
Esmolol is shortest acting β-blocker.
**Remember**

- *Nodalol is longest acting P-blocker.*
- *Esmolol is shortest acting n-blocker*
- Acebutolol possesses all activities i.e., cardioselectivity, partial agonist activity, membrane stablizing activity and lipid insolubility.
- Beta blockers approved for treatment of CHF : Carvedilol (most widely used), metaprolol, bisoprolol.
- Carvedilol is a $13_{/}$ + 132 + $a_{l}$ adrenoreceptor blocker with a : i3 blocking property of l : 9. It produces
- peripheral vasodilatation due to a-1 blockade as well as calcium channel blockade (direct effect).
- Atenolol, sotalol and nodalol are primarily excreted by kidney → should not be given in renal failure.
- *Sotalol, penbutolol and pindolol have almost 100% bioavailibility.*
- *Penbutolol has maximum oral absorption.*
- *Carvedilol has maximum plasma protein binding.*
- *Celiprolol has minimum plasma protein binding.*

## 511. Amphetamine causes which of the following ?

a) IUGR

b) Cardiac anamoly

c) Cleft lip

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

**Following are the fetal or neonatal effects of amphetamines :**

- IUGR
- Abruptio placentae
- Glassy eyed look
- Prematurity
- Hypoglycemia
- Lethargy
- Cardiac anamolies
- Sweating
- Feeding problems
- Cleft palate
- Poor visual tracing

## 512. Neostigmine is used in the following except ?

a) Myasthenia gravis

b) Cobra bite

c) Atony of bladder

d) Glaucoma

Correct Answer - D
Ans. is 'd' i.e., Glaucoma

## 513. Beta blocker with d isomer responsible for beta blocker action is ?

a) Nebivolol

b) Timolol

c) Esmolol

d) Propranolol

Correct Answer - A

**Ans. is 'a' i.e., Nebivolol**

Nebivolol is a novel betal-blocker with a greater degree of selectivity for betal-adrenergic receptors than other agents in this class and a nitric oxide (NO)-potentiating, vasodilatory effect that is unique among beta-blockers currently available to clinicians. Nebivolol is a racemic mixture with beta-blocker activity residing in the d-isomer; in contrast, l-nebivolol is far more potent in facilitating NO release.

**Note :**

- Beta blockers with 1 isomer having beta blocking activity are :?
- Propranolol, atenolol, metoprolol, esmolol, timolol

## 514. Patient on verapamil should not be given beta blocker as ?

a) Conduction block

b) Bronchospasm

c) Neurogenic shock

d) Anaphylaxis

Correct Answer - A

**Ans. is 'a' i.e., Conduction block**

**Adverse effects of CCBs**

- Nausea, constipation and bradycardia are more common with verapamil.
- Verapamil can accentuate conduction defect-should be avoided in $2^{nd}$ & $3^{rd}$ degree block, in sick sinus syndrome and along with 13-blocker.
- Most common side effects of DHPs are palpitation, flushing, hypotension, headache, ankle edema, drowsiness and nausea.
- Nifedipine can paradoxically increase the frequency of angina in some patients.
- Nifedine can cause voiding difficulty in elderly (relaxant effect on bladder) and glucose intolerance (decreases insulin release).

## 515. Nonselective beta adrenergic antagonist is

a) Nodalol

b) Atenolol

c) Bisoprolol

d) Esmolol

Correct Answer - A
Ans. is 'a' i.e., Nodalol

## 516. Mechanism of action of timolol is ?

a) Nonselective beta blocker

b) Nonselective alpha blocker

c) Selective beta 1 blocker

d) Selective beta 2 blocker

Correct Answer - A
Ans. is 'a' i.e., Nonselective beta blocker
Timolol is a non selective beta blocker (betal + beta 2).
Thus when it is used in the treatment of glaucoma it can precipitate an attack of asthma by blocking beta 2 receptors.

## 517. Beta blockers mask all effects of hypoglycemia except ?

a) Sweating

b) Palpitations

c) Dizziness

d) Tremors

Correct Answer - C
**Ans. is 'c' i.e., Dizziness**
**Symptoms of hypoglycemia are attributable to :-**
*i) Sympathetic stimulation :* Sweating, tremor, tachycardia palpitations and anxiety. These are the warning signs.
*ii) Cerebral glucose deficiency :* Decreased cognitive functions, dizziness and decreased concentration.

- Use of beta-blockers, especially in diabetics who are taking treatment, may mask typical sympathetic system mediated symptoms of hypoglycemia such as *sweating, tremor, tachycardia, and palpitations.*
- Thus, dangerous severe hypoglycemia can occur without any warning signs.

## 518. CB 1 antagonist used in smoking cessation is ?

a) Naloxona

b) Rimonabant

c) Vareniloline

d) Bupripion

Correct Answer - B
Ans. is 'b' i.e., Rimonabant
**Rimonabant**

- A selective cannabinoid receptor-1 (CB-1) antagonist which is being tried as antismoking and antiobesity drug.

## 519. IV diazepam has which of the following effect which is not seen by other routes ?

a) Analgesia

b) Sedation

c) Hypotension

d) Coronary dilatation

Correct Answer - D

**Ans. is 'd' i.e., Coronary dilatation**

**Mechanism of action of benzodiazepines (BZDs)**

- Benzodiazepines act preferentially on *midbrain ascending reticular formation* (which maintains wakefulness) and on *limbic system* (thought and mental function).
- Muscle relaxation is produced by action on *medulla.*
- Ataxia is due to action on *cerebellum.*
- BZDs acts on *$GABA_A$ receptors.*
- $GABA_{,,}$ receptor has 5 subunits a / p, p, a / y.
- GABA binding site is on p. subunit, while BZDs binding site is on a / y subunit.
- BZDs receptor increase the conductance of Cl- channel.
- BZDs do not themselves increase Cl- conductance, i.e. they have only GABA facilitatory but no GABA mimetic action. (Barbiturates have both GABA facilitatory and GABA mimetic actions).

**Effect on CNS**

- In contrast to barbiturates, BZDs are not general depressant, but exert relatively selective *anxiolytic, hypnotic, muscle relaxant* and *anticonvulsant effects.*

- *The antianxiety action of BZDs is not dependent on their sedative property —› with chronic administration relief of anxiety is maintained, but drowsiness wanes off due to development of tolerance.*
- Stage 2 sleep is increased, while REM, Stage 3 & 4 sleep are decreased.
- *Nitrazepam is the only benzodiazepine, which increases REM sleep.*
- *Clonazepan and diazepam have more marked muscle relaxant property.*
- *Clonazepam, diazepam, nitrazepam and flurazepam have more prominent anticonvulsant activity than other BZDs.*
- *Diazepam (but not other BZDs) has analgesic action.*
- *Diazepam produces short lasting coronary dilatation on i.v. injection.*
- Diazepam decreases nocturnal gastric secretion and prevents stress ulcers.

## 520. Which of the following SSRI is a prodrug?

a) Fluoxetine

b) Paroxetine

c) Citalopram

d) Fluvoxamine

Correct Answer - A

**Ans. is 'a' i.e., Fluoxetine**

**Selective serotonin reuptake inhibitors (SSRI)**

- **5-HT (serotonine) is the major player in depressive illness** and serotonergic pathways are closely related to mood disorders especially depression.
- Thus, drugs affecting the 5-HT levels in the neural synapse and serotonergic pathways are effective in the treatment of depression.
- Therefore, the **SSRIs** have been shown to alleviate depression and are the **most commonly used drugs in the therapy of depression.**
- These drugs act by inhibiting reuptake of 5-HT.
- These drugs are now *1st choice for depression.*
- Advantages over TCAs.

  1.Little or no sedation, no weight gain.
  2.No interference with psychomotor or cognitive function.
  3.No anticholinergic side effects.
  4.No postural hypotension (no action of a-adrenergic receptors).
  5.No propensity to cause seizures or arrythmias.

## 521. Drug used in treatment of migraine ?

a) 5HT1 agonist

b) 5HT1 antagonist

c) Dl agonist

d) D1 antagonist

Correct Answer - A
Ans. is 'a' i.e., 5HT1 agonist

## 522. Following are the side effects of fenfluramine except ?

a) Pulmonary hypertension

b) Valvular defects

c) Sudden deaths

d) Dizziness

Correct Answer - D

**Ans. is 'd' i.e., Dizziness**

**Fenfluramine and Dexfenfluramine**

- They reduce the food seeking behavior by enhancing the serotonergic transmission in the hypothalamus.
- They were extensively used for slimming
- Tolerance develops to the anorectic action of in 2 - 3 monthsEchocardiographic abnormalities, valvular defects, pulmonary hypertension and sudden deaths are the documented side effects.
- These drugs have been discontinued by USFDA.

## 523. Following is false about aripiprazole except ?

a) Only antipsychotic with D1 agonistic activity

b) It has 5HT1A antagonistic action

c) It has maximum sedating potential

d) It is the drug of choice in treatment of acute mania

Correct Answer - D

Ans. is `d' i.e., It is the drug of choice in treatment of acute mania

*Atypical antipsychotics* —> Olanzapine, risperidone, aripiprazole or quetiapine with or without benzodiazepine is the treatment of choice for acute mania.

**Aripiprazole**

*Only antipsychotic with* $D_2$ *agonistic activity. (all others are* $D_2$ *antagonists).*

*Longest acting*

It also has $5HT_{,A}$ agonistic and $5HT_2$ antagonistic activity - Also known as *dopamine-serotinine stabilizer.*

*It is least sedating antipsychotic → can cause insomnia.*

## 524. Which is the antidepressant with no anticholinergic effects?

a) Imipramine

b) Mianserine

c) Fluoxamine

d) Amitryptiline

Correct Answer - C

**Ans. is 'c' i.e., Fluoxamine**

**Antidepressants with no anticholinergic (antimuscarinic) action.**

- Bupropion
- Escitalopram
- Fluvoxamine
- Paroxetine
- Trazodone
- Citalopram
- Duloxetine
- Venlafaxine
- Sertaline
- Mirtazapine Fluoxetine is the only SSRI which has some anticholinergic action.

**Remember**

**Antidepressants with no sedative action**

- Bupropion
- Citalopram
- Fluvoxamine
- Protriptyline
- Duloxetine

- Escitalopram
- Venlafaxine

(Note : First 6 drugs are same in both groups)

## 525. Inverse agonist of benzodiazepine receptor is -

a) Phenobarbitone

b) Flumazenil

c) Beta carboline

d) Gabapentin

Correct Answer - C
Ans. is `c' i.e., Beta carboline

## 526. Dantrolene acts on ?

a) Raynodine receptor

b) Cannabinoid receptor

c) Both of the above

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Raynodine receptor**

**Dantrolene**

- Dantrolene is a directly acting skeletal muscle relaxant.
- Mechanism of action
- Normally excitation (depolarization of end plate) is coupled with contraction by Ca" Excitation contraction coupling.
- Dantrolone acts on *Ryanodine receptors (RyR)* Calcium channels in sarcoplasmic reticulum of skeletal muscles and prevents their depolarization triggered opening → no release of intracellular $Ca^{+2}$ → No excitation contraction coupling → No contraction.
- That means *muscle contraction is uncoupled from depolarization of the membrane.*
- *Dantrolene is DOC for malignant hyperthermia.*

It can also be used in

.. Neuroleptic malignant syndrome.

2. To reduce spasticity in UMN disorders, hemiplegia, paraplegia, cerebral palsy and multiple sclerosis.

- *Muscular weakness is the dose limiting side effect.*
- Other side effects are sedation, malaise, light headedness, *troublesome diarrhoea and liver toxicity.* Remember
- *Quinine* also acts as directly acting muscle relaxant.
- It increases refractory period and decreases excitability of motor end

plates.

- It can be used in nocturnal leg cramp.

## 527. All release histamine except ?

a) Pancuronium

b) D- TC

c) Succinylcholine

d) Mivacurium

Correct Answer - A

**Ans. is 'a' i.e., Pancuronium**

**Properties of NM Blockers**

- *Longest acting Neuromuscular blocker → Pancuronium (duration of action 120-180 minutes). (Goodman &* Gilman 11 th/e p. 222) (Note: In some books pipecuronium or Doxacurium have given as the longer activity).
- *Shortest and fastest acting neuromuscular blocker → Succinylcholine (suxamethonium) - duration of action 5-8 minutes.*
- *Shortest acting competitive (nondepolarizing) neuromuscular blocker → Mivacurium (duration of action 12-18 minutes).*
- *Fastest acting nondepolarizing blocker Rocuronium (can be used for endotracheal intubation as an alternative to Sch).*
- Non-depolarizing neuro-muscular blockers can cause ganglion block, vagal block and Histamine release (different agents has different propensity).
- *Histamine release is caused by → D-TC (maximum tendency), succinylcholine, mivacurium, doxacurium, atracurium, tubocurarine → can cause bronchoconstriction.*
- *Virtually no histamine release → Pancuronium*
- *Vagal block is caused by Pancuronium, recuronium, Gallamine.*
- *Maximal vagal block and tachycardia is caused by → Pancuronium (Previously it was gallamine, but it is not used now).*

- *Vagal stimulation is caused by → succinylcholine (can cause bradycardia).*
- Ganglion block is caused by → d-Tc, Metocurine, Alcuronium.
- *Maximum ganglion blockade is caused by → d-TC.*
- *Ganglion stimulation is caused by → Succinylcholine.*

## 528. Atomoxetine is used for ?

a) Nocturnal enuresis

b) ADHD

c) Temper tantrums

d) Patent ductusarteriosus

Correct Answer - B

**Ans. is 'b' i.e., ADHD**

- Atomoxetine it is selective norepinephrine reuptake inhibitor and is approved for use in ADHD.
- It is indicated in children > 6 years and in adults with concentration and attention problems.
- Atomoxetine absorbed orally, hydroxylated by CYP2D6 and excreted in urine, mainly as glucuronide.
- While majority of individuals are extensive metabolizers (EM), few are poor metabolizers (PM) due to polymorphism of CYP2D6.
- Inhibitors of CYP2D6 like fluoxetine, paroxetine, quinidine increase concentration and toxicity of atomoxetine.
- It should not be given with MAO inhibitors and is contraindicated in glaucoma.

## 529. Fomepizole acts as antidote for ?

a) Methanol poisoning

b) Cannabis poisoning

c) Lead poisoning

d) Cadmium Poisoning

Correct Answer - A
**Ans. is 'a' i.e., Methanol poisoning**

- Methanol is highly toxic alcohol. It is metabolized to formaldehyde (by alcohol dehydrogenas) and formic acid (by acetaldehyde dehydrogenase).
- It is the accumulation of formic acid which causes toxic effects in methanol poisoning. Accumulation of formic acid results in *lactic acidosis/high anion gap metabolic acidosis* with low plasma bicarbonates, *blindness due to retinal damage, papilledema.*
- Methanol poisoning can be treated by supportive measures, *gastric lavage* and *sodium bicarbonate* (to treat acidosis). Ethanol is useful because it competitively inhibits the conversion of methanol to formic acid. Fomepizole can also be used as it is a specific inhibitor of alcohol dehydrogenase. Folic acid or folinic acid. Enhance the metabolism formic acid to $CO_2$. Hemodialysis may also be used.

## 530. Weight gain is seen with all of the following antipsychiatric medications except ?

a) Quitiapine

b) Resperidone

c) Clozapine

d) Molindone

Correct Answer - D

**Ans. is `d' i.e., Molindone**

- Antipsychotics usually cause weight gain. *Quitiapine, olanzapine, clozapine and resperidone, all have been implicated in weight gain.*
- *Molindone has often been reported to cause weight loss rather than weight gain.*

## 531. Which drug is used in amytrophic lateral sclerosis?

a) Riluzole

b) Glatirame

c) Tacrine

d) Olanzapine

Correct Answer - A
**Ans. is 'a' i.e., Riluzole**
**Drugs used in neurodegenerative disorders**
**Multiple sclerosis**

- Beta-interferon or glatirame decrease the frequency of relapses in relapsing remitting MS. Recently, natalizumab (a monoclonal antibody) has been tried.
- Amyotropic lateral sclerosis
- Riluzole (NMDA antagonist) is useful in ALS. To relieve spasticity Baclofen may be used.

## 532. Rotigotine is ?

a) Dopamine agonist

b) Dopamine antagonist

c) GABA agonist

d) GABA antagonist

Correct Answer - A
**Ans. is 'a' i.e., Dopamine agonist**
**Rotigotine**

- Rotigotine is a *dopamine agonist* drug and is indicated in the treatment of *parkinosonism.*
- Rotigotine is intended to be delivered through *transdermal patches,* so as to ensure a slow and constant dosage in a 24-hour period.
- Side effects are--skin reaction at the patch site, nausea, vomiting, diziness, drowsiness, insomnia.

## 533. Natalizumab is used in treatment of ?

a) Muliple sclerosis

b) Breast carcinoma

c) Psoriasis

d) B cell lymphoma

Correct Answer - A

**Ans. is 'a' i.e., Multiple sclerosis**

**Treatment of multiple sclerosis**

1. *Treatment of acute attack*

- Corticosteroids (Methylprednisolone, prednisolone) are used

2. *Treatment with disease-modifing agents that reduce the biological activity of MS*

- Disease modifying agents for multiple sclerosis are (i) *IFN-13 la;* (ii) *IFN-13 lb,* (iii) Glatiramer; (iv) Natalizumab; (v) Finoglimod: (vi) Mitoxantrone; (vii) Cladaribine.

3. *Other treatment options*

- Other off-label treatment options are (i) methotrexate; (ii) cyclophosphamide; (iii) IV immunoglobulins; (iv) azathioprine.

4. *Symptomatic Treatment*

- It includes healthy diet, regualr exercise.
  - Treatment of rigidity (baclofen, diazepam, tizanidine, dantroline)
  - Treatment of weakness (Potassium channel blockers like 4-aminopyridine)
  - Treatment of pain by anticonvulsants (carbamezapine, phenytoin, gabapentin, pregabalin), or antidiepressants (mexiletin).
  - Treatment of UTI, bladder dysfunction, constipation, depression, fatigue and cognitive problems.

## 534. Most common receptor for typical antipsychotics is ?

a) D1

b) D2

c) D3

d) D4

Correct Answer - B

**Ans. is 'b' i.e., D2**

**ANTIPSYCHOTICS**

- Antipsychotic *(neuroleptic)* drugs can be divided into typical and atypical.

**Typical**

- Block $D_2$ receptors
- Have significant extrapyramidal symptoms (except for thioridazine) - Parkinsonism, Acute muscular dystonia, Akathisia, Malignant neuroleptic syndrome, *Tardive dyskinesia.*

**Atypical**

- These are *newer generation (second generation)* antipsychotics that have weak $D_2$ blocking but potent 5-HT2 antagonistic activity.
- *Called atypical because they have no D2 blocking property (except resperidone).*
- *Extrapyramidal side effects are minimal* (Resperidone can cause some extrapyramidal effects).
- Have no antiemetic effect.
- Examples are → *Clozapine, Risperidone, Olanzapine, Quetiapine, Aripiprazole, Ziprasidone.*

## 535. Patient on treatment on carbidopa + levodopa for 10 yrs now has weaning off effect. What should be added to restore action ?

a) Tolcapone

b) Amantadine

c) Rasagiline

d) Benzhexol

Correct Answer - A

**Ans. is A i.e., Tolcapone**

- Both Entacapone and tolcapone enhance and prolong the therapeutic effect of levodopa-carbidopa in advanced and fluctuating parkinsons disease. They may be used to smoothen off the 'wearing off', increase 'on' time and decrease 'off' time, improve activities of daily living and allow levodopa dose to be reduced.

**Tolcapone**

- It is a drug used to treat Parkinson's disease (PD).
- It is a selective, potent and reversible nitrocatechol-type inhibitor of the enzyme catechol-O-methyltransferase (COMT).
- In comparison with entacapone, another nitrocatechol COMT inhibitor, tolcapone has a longer half life (2.9 hours vs. 0.8 hours) and can better penetrate the blood–brain barrier, acting both in the central nervous system and in the periphery. However, entacapone is less toxic for the liver.
- Tolcapone improves the bioavailability and reduces the clearance of levodopa and subsequently dopamine from the CNS.
- Without administration of tolcapone, the beneficial effects of

levodopa tend to wear off more quickly, resulting in motor fluctuations.

**536. Patient of juvenile myoclonic epilepsy on valproate comes to you at 5 months of pregnancy with level H scan normal what will you advise?**

a) Change the drug

b) Continue the drug in same dose

c) Decrease the dose of drug

d) Increase the dose of drug

Correct Answer - B
Ans. is 'b' i.e., Continue the drug in same dose
Valproic acid has the risk of fetal malformations during the first trimester of pregnancy.
This patient has normal level II scan at 5 months of pregnancy so the risk period of valproate is already over and valproate is the drug of choice in juvenile myoclonic epilepsy.
Thus the drug shoud be continued in the same doses.

## 537. Varenicline acts by ?

a) Partial nicotine receptor agonist

b) Nicotine receptor antagonist

c) Both agonist and antagonist at nicotine receptor

d) None of the above

Correct Answer - A
**Ans. is 'a' i.e., Partial nicotine receptor agonist**
**Varenicline**

- It is partial agonist at the nicotine receptor.
- It is used in nicotine addicts.

## 538. Drugs which potentiate effect of NMDA at NMDA receptors are all except ?

a) Ketamine

b) Aspartic acid

c) D alanine

d) Homocysteic acid

Correct Answer - A
Ans. is 'a' i.e., Ketamine
Ketamine is NMDA receptor blocker so it does not potentiate the NMDA action.

## 539. Which does not act by blocking NMDA receptors?

a) Methoxetamine

b) Methadone

c) Ketamine

d) Diltiazem

Correct Answer - D
**Ans. is 'd' i.e., Diltiazem**
**Drugs acting by blocking NMDA receptors are:**
i. *Methoxetamine*
i. Phencyclidine
i. *Methadone*
v. Dizocilpine
v. Felbamate
i. Dextropropoxyphene
i. Acamprost
i. Tramadol
k. Ketamine
k. Pethidine
i. Atomoxetine
i. Nitrous oxide

## 540. Most common renal sequel of lithium toxicity is ?

a) Nephrogenic DM

b) Renal tubular acidosis

c) Glycosuria

d) MPGN

Correct Answer - A

**Ans. is 'a' i.e., Nephrogenic DM**

**Lithium associated renal toxicity**

- The use of lithium salts for the treatment of manic-depressive illness may have several renal sequelae, the most common of which is nephrogenic diabetes insipidus manifesting as polyuria and polydipsia.
- Lithium accumulates in principal cells of the collecting duct by entering through the epithelial sodium channel (ENaC), where it inhibits glycogen synthase kinase 3 and down- regulates vasopressin-regulated aquaporin water channels.
- Less frequently, chronic tubulointerstitial nephritis develops after prolonged (greater than 10-20 years) lithium use and is most likely to occur in patients that have experienced repeated episodes of toxic lithium levels.

**541. Magnan's phenomenon occurs in addiction of:**

a) Alcohol

b) Cocaine

c) LSD

d) Opiates

Correct Answer - B
Cocaine

## 542. Most serious side effect of valproate is

a) Fulminant hepatits

b) Spina bifida

c) Weight gain

d) Thrombocytopenia

Correct Answer - A

**Ans. is 'a' i.e., Fulminant hepatits**

**Valproate**

- **Valproate acts by multiple mechanism :**

1. Prolongation of inactivated Na* channel.
2. Inhibition of T type Ca' current.
3. Inhibition of degradation of GABA by GABA transminase → facilitation of GABA mediated Cl- channel opening.

- *Its most serious adverse effect is fulminant hepatitis especially in children below 3 years.*
- *Used during pregnancy, it has produced spina bifida and other neural tube defects.*
- Uses (other than epilepsy) --> mania & bipolar illness, prophylaxis of migraine, trigeminal neuralgia, tardive dyskinesia.

**Adverse effect of Valproate**

- Neurological - Ataxia, sedation,tremor
- Systemic- Hepatotoxicity, thromobocytopenia,GI irritation, weight gain, transient alopecia, hyperammonemia, pancreatitis,coagulation disorder.

## 543. Oxcarbazepine true is all except ?

a) Metabolises itself

b) Less chances of hyponatremia than carbazepine

c) It is less enzyme inducer than carbamazepine

d) Less chances of hepatotoxicity than carbamazepine

Correct Answer - B

**Ans. is 'b' i.e., Less chances of hyponatremia**

**Oxcarbazepine**

- It is rapidly converted into active metabolite.
- Drug interactions and autoinduction of its own metabolism are less marked, because it is a weak enzyme inducer.
- Risk of hepatotoxicity is lower than with carbamazepine.
- Chances of hyponatremia are more with oxcarbazepine compared to carbamazepine.
- It 1·5 times less potent than carbamazepine.

## 544. Treatment of choice for cheese reaction ?

a) Prazocin

b) Pentazocin

c) Phentolamine

d) Phenoxybenzamine

Correct Answer - C

**Ans. is 'c' i.e., Phentolamine**

**Cheese reaction**

- Certain varieties of cheese, beer, wines, picked meat and fish, yeast extract contain large quantities of tyramine, dopa.
- In MAO inhibited patients these indirectly acting sympathomimetic amines escape degradation in the intestinal wall and liver → reaching into systemic circulation they displace large amount of NA from adrenergic nerve endings Hypertensive crisis, cerebrovascular accidents.
- T*his can be treated by i.v. injection of a rapidly acting phentolamine. Prazosin and chlorpromazine are alternative.*

## 545. Following are the side effects of thiazides except?

a) Hypokalemia

b) Hypocalcemia

c) Hepatic coma

d) Impotence

Correct Answer - B

**Ans. is 'b' i.e., Hypocalcemia**

**Following are the side effects of thiazides:**

- Hypokalemia
- Acute saline depletion, hemoconcentration and increased risk of peripheral venous thrombosis
- Dilutionsalhyponatremia
- Nausea omitting diarrhea
- Rarely headache, giddiness, weakness, parethesias, impotence
- Hearing loss
- Rashes, photosensitivity
- Hyperuricemia
- Hyperglycemia hyperlipidemia o Hypercalcemia
- Magnesium depletion
- Aggravated renal insufficiency
- Brisk diuresis leading to mental disturbance and hepatic coma

**546. A = ACE inhibitor, B = beta blocker, C = calcium channel blocker, D= diuretics. For elderly with hypertension antihypertensive drug of choice is ?**

a) A or D

b) A or B

c) A or C

d) C or D

Correct Answer - D
**Ans. is 'd' i.e., C or D**
**Pharmacological treatment of hypertension**
*Indications of drug therapy (the British hypertension society guidelines).*
When sustained BP exceeds 160/100 mmHg or.
When BP is in the range of 140-159 / 90-99 mmHg and there is target organ damage or cardiovascular disease.
For diabetics when BP exceeds 140/90 mmHg.
The optimal target is to lower BP to or below 140/85 mmHg in nondiabetics and 140/80 mmHg in diabetics (WHO target is 130/85 mmHg).
Drug therapy
A simple stepped AB/CD regimen is used.

## 547. Digitalis produces which of the following changes in ECG ?

a) Tall T waves

b) ST segment elevation

c) Prolonged QT interval

d) Prolonged PR interval

Correct Answer - D

**Ans. is 'd' i.e., Prolonged PR interval**

There are some characteristic ECG changes by digitalis use, some of which occur at therapeutic concentration and some occurs at toxic level :

**At therapeutic level**

- Prolongation of PR interval
- Scooping of ST segment → Also known as *digitalis wave or dig sag* there is down sloping ST depression (initially)
- Shortening of QT interval
- Decreased T wave amplitude/or T wave inversion

**At toxic level: Above changes are amplified**

- Prolongation of PR interval → conduction block may occur
- T wave inversion
- ST depression
- QT interval shortens further
- Increased automaticity → Arrhythmias

## 548. Anti-inflammatory dose of aspirin ?

a) 500 mg/d

b) 1 - 2 g/d

c) 3 - 6 g/d

d) 6 - 12 g/d

Correct Answer - C
Ans. is 'c' i.e., 3 - 6 g/d
The anti-inflammatory action of aspirin is exerted at high doses of 3 - 6 g/ day or 100 mg/ Kg/ day.
The anti-inflammatory action is mainly due to inhibition of COX, causing inhibition of PGs synthesis.
In addition to COX inhibition, quenching of free radicals may contribute to its anti-inflammatory action.

## 549. Mechanism of action of levosimenden is ?

a) Inoconstrictor

b) Potassium channel opener

c) Sodium channel opener

d) Beta blocker

Correct Answer - B
**Ans. is b i.e., Potassium channel opener**
**Levosimendon**
A new ionodilator is Levosimendon
**It has inodilator effect by:**
*i) Inotropic effect :* Levosimendon is calcium sensitiser, i.e. it increases the sensitivity of the heart to calcium that results in increased cardiac contractility without a rise in intracellular calcium.
*ii) Vasodilatory effect :* by opening ATP-sensitive potassium channels in vascular smooth muscles it causes smooth muscle relaxation.

## 550. Antihypertensive which can not be given in pregnancy ?

a) Labetolol

b) Propranolol

c) Esmolol

d) Hydralazine

Correct Answer - B
Ans. is 'b' i.e., Propranolol

## 551. Fluoroquinolone with minimum bioavailability ?

a) Levofloxacin

b) Moxifloxacin

c) Norfloxacin

d) Ciprofloxacin

Correct Answer - C
Ans. is 'c' i.e., Nortloxacin

## 552. Maximum sterilising action is shown by which anti TB drug ?

a) Rifampicin

b) INH

c) Pyrazinamide

d) Streptomycin

Correct Answer - A

**Ans. is 'a' i.e., Rifampicin**

**There are three main properties of antitubercular drugs :-**

i. *Bactericidal activity (tuberculocidal activity).*
i. *Sterilizing activity.*
i. *Ability to prevent resistance*

**Bactericidal activity**

- Isoniazid and rifampicin are the most powerful bactericidal drugs, active against all populations of TB bacilli. Pyrazinamide and streptomycin are also bactericidal against certain populations of TB bacilli.

**Sterilizing activity**

- *Sterilizing acitivity is the ability to kill all the bacilli in lesions as rapidly as possible.*
- *Rifampicin is the most potent sterilizing antitubercular drug.* Pyrazinamide is also having sterilizing action.

**To prevent resistance**

- Ethambutol and thioacetazone are used in association with more powerful drugs to prevent emergence of resistance.

## 553. Neuropsychiatry symptoms are seen with which anti TB drug ?

a) INH

b) Rifampicin

c) Pyrazinamide

d) Streptomycin

Correct Answer - A
**Ans. is 'a' i.e., INH**
**Adverse effects of INH**

- *Peripheral neuritis (most common), hepatitis, optic neuritis &* atrophy, seizure, ataxia, muscle twitching, toxic encephalopathy, *psychoses,* rashes, fever, arthralgia, acne, *lupus like syndrome, hemolytic anemia in G6PD deficiency.*

**Note:** *Most common antitubercular drug which is implicated in causing peripheral neuropathy is INH.*

## 554. Which anti TB drug is avoided in HIV patient ?

a) INH

b) Rifampicin

c) Pyrazinamide

d) Streptomycin

Correct Answer - B

**Ans. is 'b i.e., Rifampicin**

- All HIV-infected TB patients are candidates for ART, and the optimal timing for its initiation is as soon as possible and within the first 8 weeks of anti-TB therapy.
- Rifampin, a potent inducer of enzymes of the cytochrome P450 system, lowers serum levels of many HIV protease inhibitors and some non- nucleoside reverse transcriptase inhibitors-essential drugs used in ART.
- In such cases, rifabutin, which has much less enzyme- inducing activity, has been recommended in place of rifampin. However, dosage adjustment for rifabutin and/or the antiret- roviral drugs may be necessary.

## 555. Cyclic peptide chain is present in ?

a) Gramicidin A

b) Gramicidin B

c) Gramicidin D

d) Gramicidin S

Correct Answer - D
**Ans. is d i.e., Gramicidin S**
**<u>Gramicidin</u>**
Gramicidin is a heterogeneous mixture of three antibiotic compounds, gramicidins A, B and C, making up 80%, 6%, and 14%, respectively,all of which are obtained from the soil bacterial species Bacillus brevis and called collectively gramicidin D.
Gramicidin D contains linear pentadecapeptides, that is chains made up of 15 amino acid.
This is in contrast to gramicidin S, which is a cyclic peptide chain.
Gramicidin is active against Gram-positive bacteria, except for the Gram-positive bacilli, and against select Gram-negative organisms, such as Neisseriabacteria. Its therapeutic use is limited to topical application, as it induces hemolysis in lower concentrations than bacteria cell death, so it cannot be administered internally.

## 556. Drug of choice for MRSA infection ?

a) Ciprofloxacin

b) Oxacillin

c) Vancomycin

d) Clindamycin

Correct Answer - C

**Ans. is 'c' i.e., Vancomycin**

**Methicillin resistance staphylococcus aureus (MRSA)**

- MRSA is a bacterium responsible for several difficult-to-treat infections in humans.
- It may also be referred to as *multi-drug resistant staphylococcus aureus or oxacillin resistant staphylococcus aureus (ORSA).*
- MRSA is *by definition any strain of staphylococcus aureus that is resistant to a 13-lactams including penicillin, methicillin, cloxacillin, nafcillin, oxacillin and cephalosporins.*
- *Resistance develops due to alteration in transpeptidase (penicillin binding protein) on which all* 13-lactam *antibiotic act : so, MRSA is resistant to all 0-lactam antibiotics.*
- *MRSA (especially community acquired MRSA; CA-MRSA) display enhanced virulence, spreading more rapidly and causing disease much more severe than traditional staphylococcus aureus.*

## 557. Colistin is obtained from ?

a) Bacteria

b) Fungi

c) Actinmycetes

d) Herbs

Correct Answer - A
**Ans. is 'a' i.e., Bacteria**
**Amongst the given options no drugs is obtained from fungus.**
**Antibiotics are obtained from -**
1. Fungi - Penicilllin, Cephalosporin, Griseofulvin.
2.Bacteria - Polymyxin B, Colistin, Bacitracin, Tyrothricin, aztreonam.
3. Actinomycetes - Aminoglycosides, Tetracyclines, Chloramphenicol, macrolides, Polyenes.

## 558. HIV integrase inhibitor is ?

a) Elvitegravir

b) Abacavir

c) Maraviroc

d) Tenofovir

Correct Answer - A
**Ans. is 'a' i.e., Elvitegravir**
**Integrase inhibitors**

- Raltegravir and Elvitegravir act by inhibiting enzyme integrase.

## 559. Treatment agent for scarlet fever is

a) Penicillin

b) Ciprofloxacin

c) Erythromycin

d) Chloramphenicol

Correct Answer - A
**Ans. is 'a' i.e., Penicillin**
**Treatment :**

- Immediate hospitalization and isolation of the patient is indicated. Penicillin is the treatment of choice.

## 560. Treatment for impetigo ?

a) Dicloxacillin

b) Ciprofloxacin

c) Gentamycin

d) Amoxicillin and clavulanic acid

Correct Answer - A
Ans. is 'a' i.e., Dicloxacillin

- Treatment of impetigo is either dicloxacillin or cephalexin can be given at a dose of 250 mg four times daily for 10 days.
- Topical mupirocin ointment is also effective.

## 561. Which of the following can prolong QT interval?

a) Nalidixic acid

b) Ofloxacin

c) Gatifloxacin

d) Pefloxacin

Correct Answer - C
Ans. is 'c' i.e, Gatifloxacin

## 562. Which of the following drugs has both antihelminth and antiprotozoal activity ?

a) Nitazoxanide

b) Emetine

c) Chloroquine

d) Diloxanidefuroate

Correct Answer - A
**Ans. is 'a' i.e., Nitazoxanide**
**Nitazoxanide**

- This is the salicylamidecogener of the antihelminthniclosamide, introduced for the treatment of giardiasis and cryptosporidiosis and is also active against other protozoa and helminthes including E. histolytica, T. vaginalis, Ascaris and H. nana.
- It is a prodrug which onn absorption is converted into active for tizoxanide.
- Tizoxanide is an inhibitor of PFOR enzyme that is the essential pathway of electron transport energy metabolism in anaerobic organisms.

**563. Which of these is not used for the treatment of typhoid ?**

a) Chloramphenicol

b) Ciprofloxacin

c) Ceftriaxone

d) Cefixime

Correct Answer - D
Ans. is 'd' i.e., Cefixime

## 564. Antifungal which can be used orally but not iv is?

a) Voriconazole

b) Amphoterecin B

c) Terbinafine

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Terbinafine

## 565. Bacteria not affected by streptogramins is ?

a) E. coli

b) Staphylococcuaureus

c) Legionella

d) M. pneumoniae

Correct Answer - A
Ans. is 'a' i.e., E. coli
Streptogramins are active against gram-positive cocci and organisms responsible for atypical pneumonia (e.g., *M. pneumoniae, Legionella* spp., and *Chlamydia pneumoniae),* but largely inactive against gram-negative organisms.
They are bactericidal against streptococci and many strains of staphylococci, but bacteriostatic against *E. faecium.*

## 566. Not a drug recommended for P. falciparum is ?

a) Quinine

b) Ciprofloxacin

c) Artemether

d) Doxycycline

Correct Answer - B
Ans. is 'b' i.e., Ciprofloxacin

## 567. Cephalosporin causing thrombocytopenia is ?

a) Cefixime

b) Ceftazidime

c) Cefoperazone

d) Cefdinir

Correct Answer - B

**Ans. is 'b' i.e., Ceftazidime**

**Adverse effects of cephalosporins**

- *Hypersensitivity reaction* - It is the most usual side effect. There is cross allergy between penicillins and cephalosporine in 5-10% of cases.
- *Diarrhea* - due to alteration of gut flora, *maximum with oral cephradine and parentral cefperazone (cefperazone is significantly excreted in bile)* → May cause pseudomembranous colitis caused by Cl. difficle.
- *Superinfection - Most common organisms are candida and pseudomonas,* less common are staphylococci, proteus.
- *Ceftriaxone* achieves high concentration in bile and, as the calcium salt, may precipitate to cause symptoms resembling cholelithiasis (Biliary pseudolithiasis).
- *Nephrotoxicity* - highest with *cephaloridine.*
- *Bleeding* - ceftriaxone, cefoperazone, moxalactam & cefamandole can cause *hypoprothrmbinemia* and bleeding.
- *Disulfiram like reaction - cefamandole, cefoperazone, moxalactam* and *cefotetan* can cause disulfiram like reaction with alcohol.
- *Neutropenia* and *thrombocytopenia* can be caused by *ceftazidim.*

## 568. XDR TB is resistance to ?

a) Isoniazid

b) Isoniazid + Rifampicin

c) Isoniazid + Rifampicin + Ethambutol

d) Isoniazid + Rifampicin + Kanamycin

Correct Answer - D
Ans.is d i.e., Isoniazid + Rifampicin + Kanamycin
Treatment of extensive drug resistance (XDR) TB

- XDR-TB is defined as *resistance to any fluoroquinolone* and *at least one of the following three second-line drugs (capreomycin, kanamycin, amikacin),* in addition to multidrug resistance.
- The Regimen for XDR-TB would be of 24-30 months duration, with 6-12 months Intensive Phase (IP) and 18 months Continuation Phase (CP).

**Regimen is :-**

- i) Intensive phase (6-12 months) : *Seven drugs :* Capreomycin, PAS, moxifloxacin, high dose INH, clofazimine, Linezolid, amoxyclay.
- ii) Continuation phase (18 months) : *Six drugs :* PAS, moxifloxacin, high dose INH, clofazimine, linezolid, amoxyclay.

## 569. Maximum liver toxicity is seen with which anti -TB drug?

a) Isoniazid

b) Rifampicin

c) Pyrazinamide

d) Streptomycin

Correct Answer - C
Ans. is 'c' i.e., Pyrazinamide
Three first line antitubercular drugs are associated with hepatotoxicity :?
i) Rifampicin
ii) INH
iii) Pyrazinamide

- Of the three, *rifampicin is least likely to cause hepatocellular damage,* although it is associated with cholestatic jaundice.
- *Pyrazinamide is the most hepatotoxic of the first line drugs.*
- Among the second-line drugs, ethionamide, PAS and protionamide can also be hepatotoxic, although less so than any of the first line drugs.

## 570. Why quinine is unsafe in pregnancy?

a) It causes hemolysis

b) It causes hypokalemia

c) It causes hyponatremia

d) It causes smooth muscle contraction

Correct Answer - A

**Ans. is 'a' i.e., It causes hemolysis**

Quinine occasionally causes hemolysis, especially in pregnant women and in patients with falciparum malaria resulting in hemogloginuria and kidney damage. Also if used in pregnancy special care should be taken to prevent hypoglycemia.

**Ouinine**

- It is levo rotatory alkaloid obtained from cinchona bark. Its d-isomer quinidine is used as an antiarrhythmic.
- Quinine is an erythrocytic schizontocide for all species of plasmodium.
- Quinine has no effect on pre and exoerythrocytic stage.
- Mechanism of action is similar to chloroquine.

## 571. Anti HIV drug used for prevention of vertical transmission ?

a) Nevirapine

b) Lamivudine

c) Efavirez

d) Tenofovir

Correct Answer - A

**Ans. is 'a' i.e., Nevirapine**

**Treatment during pregnancy**

- HIV infected mother can transmit the virus to fetus/infant during pregnancy, during delivery or by breast feeding.
- Early diagnosis and antiretroviral therapy to mother and infant significantly decrease the rate of intrapartum and perinatal transmission (vertical transmission) of HIV infection.
- *Zidovudine* treatment of HIV infected pregnant women from the beginning of second trimester through delivery and of infant for 6 weeks following birth decreases the rate of transmission from 22.6% to < *5%.*
- *Single dose of nevirapine* given to the mother at the onset of labor followed by a single dose to the newborn within 72 hours of birth decreased transmission by 50%. *This is the prefered regimen now in developing countries.*

**572.** **A melanocytic naevus surrounded by a depigmented halo is called:**

a) Sutton's nevus

b) Meyerson’s naevus

c) Cockade naevus

d) Nevus anaemicus

Correct Answer - A

**Sutton's nevus/halo's nevus** : a halo of depigmentation appears around a preexisting melanocytic naevus**.**

**Meyerson’s naevus** is used to describe a melanocytic naevus that has developed an associated inflammatory reaction, which looks like eczema.

**Ref:** Rook's textbook of dermatology, 8th edition Pg 54.20.

## 573. Most effective agent to prevent motion sickness is?

a) Ephedrine

b) Nedocromil

c) Cyproheptidine

d) Hyoscine

Correct Answer - D
Ans. is `d' i.e., Hyoscine
Motion sickness is more easily prevented than cured.
*Transdermal hyoscine (scopolamine) is the best agent for the prevention of /notion sickness.*
Antihistamines can also be used for prevention.

## 574. Agent used for treatment of heparin induced thrombocytopenia ?

a) Lepirudin

b) Abciximab

c) Warfarin

d) Alteplase

Correct Answer - A

**Ans. is 'a' i.e., Lepirudin**

**Heparin induced thrombocytopenia (HIT)**

- Heparin induced thrombocytopenia is an important adverse effect of heparin administration, usually caused by unfractionated heparin, but may also be seen with the use of low molecular weight heparin (LMWH).
- **HIT may be of two types :**

1. Type 1 (Non-immune mediated) :- It is mild and heparin may be continued.
2. Type 2 (Immune mediated) :- It is due to formation of antibodies against platelets. Paradoxical thrombosis can occur. Heparin must be discontinued immediately. *Warfarin and LMW are contraindicated. Lepirudin* (a direct thrombin inhibitor) *is* anticoagulant of choice. Alternatives are *danaparoid, hirudin* and *Argatroban.*

## 575. Anticancer drug with disulfuram like action -

a) Procarbazine

b) Nitrosurea

c) 5 FU

d) Methotrexate

Correct Answer - A

**Ans. is 'a' i.e., Procarbazine**

**Disulfiram like reaction**

- Certain drugs when taken concurrently with alcohol produce *disulfiram like actions.*
- That means these drugs produce similar distressing symptoms as disulfiram, when taken with alcohol → flushing, burning sensation, throbbing headache, prespiration, unesasiness, tightness in chest, vomiting, dizziness, visual disturbances, mental confusion, postural fainting and circulatory collapse.

**The drugs causing Disulfiram like actions**

i. *Chlorpropramide*
i. *Animal charcol*
i. *Cephalosporins (Cefoperazone, moxalactam, cefamandole)*
*. *Griseofulvin*
*. *Metronidazole*
i. *Procarbazine*
i. *Citrated calcium carbamide*
i. *Tinidazine*
*. *Cynamide*

## 576. TADALAFIL false is ?

a) It is longest acting phosphodiesterase inhibitor

b) It cannot be used for the treatment of PAH

c) It is used in erectile dysfunction

d) Its half life is 17-5 hours

Correct Answer - B

Ans. is 'b' i.e., It cannot be used for the treatment of PAH

1. Tadalafil is the longest acting phosphodiesterase inhibitor used for erectile dysfunction.
2. Its half life is 17·5 hours.
3. It can be used as once-daily phosphodiesterase type 5 (PDE5) inhibitor for the treatment of pulmonary arterial hypertension (PAH).

## 577. Which of the following drugs is contraindicated in liver dysfunction?

a) Pefloxacin

b) Vancomycin

c) Amikacin

d) Hydralazine

Correct Answer - A
Ans. is 'a' i.e., Pefloxacin

## 578. Irreversible hearing loss caused by ?

a) Gentamycin

b) Clarithromycin

c) Both of the above

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Gentamycin

- Gentamycin is the most commonly used of the aminoglycosides. It produces vestibular toxicity and irreversible hearing loss.
- Clarithromycin is known to produce reversible hearing loss.

## 579. Mechanism of action of colchicine is ?

a) Inhibits gouty inflammation

b) Inhbits the release of chemotactic factors

c) Inhibits granulocyte migration

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

**Colchicine**

- It is neither analgesic nor anti inflammatory.
- It specifically inhibits gouty inflammation.
- It is inhibits release of chemoattractant molecules.
- It inhibits granulocyte migration into the joint.
- It is antimitotic causes metaphase arrest by binding to microtubules.
- It increases gut motility.

## 580. Hypolipidemic drugs act on all except ?

a) HMG Co A reductase

b) Lipoprotein lipase

c) Acyl CoA, cholesterol acyl transferase 1

d) Peripheral decarboxylase

Correct Answer - D

**Ans. is 'd' i.e., Peripheral decarboxylase**

**Hypolipidemic drugs**

1. HMG-CoA reductase inhibitors (statins) - Lovastatin, Simvastatin, Pravastatin, Atorvastatin, Rosuvastatin.
2. Bile acid sequestrants (Resins) - cholestyramine, colestipol.
3. Activate lipoprotein lipase (fibric acid derivatives) - clofibrate, gemfibrozil, bezafibrate, fenofibrate.
4. Inhibit lipolysis and triglyceride synthesis - Nicotinic acid.
5. Other - Probucol, Gugulipid, Ezetimibe, Avasimibe, Torcetrapib.

- *Ezetimibe* inhibits intestinal cholesterole absorption.
- *Avasimibe* inhibits enzyme *acyl Coenzyme A : cholesterol acyl transferase-1 (ACAT-1)* which causes esterification of cholesterol.
- *Torcetrapib* inhibits *cholesterol ester triglyceride transport protein* → T HDL cholesterol.

## 581. Mannitol is not useful for ?

a) Glaucoma

b) Raised ICT

c) Impending renal failure

d) Pulmonary edema

Correct Answer - D

**Ans. is 'd' i.e., Pulmonary edema**

**Mannitol**

- It is a nonelectrolyte of low molecular weight that is *pharmacologically inert.*
- It *raises osmolarity of plasma* and tubular fluid.
- Mannitol decreases tubular water and electrolyte reabsorption by ?

1. Due to osmotic effect, fluid is retained in the lumen of PT.
2. Inhibits transport processes in thick AscL+1 - *most important cause of diuresis.*
3. Expands ECF *(r intravascular volume)* - draws water from the intracellular compartment → increases GFR and *inhibits renin release.*
4. Increases renal blood flow, especially to medulla -3 medullary hypertonicity is reduced → corticomedullary osmotic gradient is dissipated → passive salt reabsortion is reduced.

- *Uses* - Raised IOT (glaucoma), raised ICT, to maintain. GFR and urine flow in impending renal failure, and to counteract low osmolality of plasma/ECF due to rapid hemodialysis.
- *Contraindications* → Acute tubular necrosis (ARF), anuria, pulmonary edema, Acute LVF, cerebral hemorrhage.

## 582. Vit K is available as all except ?

a) Menoquinone

b) Menadione

c) Phytonadione

d) Phytoquinone

Correct Answer - D

**Ans. is 'd' i.e., Phytoquinone**

**Vitamin-K**

- It is a fat soluble vitamin.
- It is the major coagulant of human body (coagulants are substances which promote coagulation).

  **It is of three types ?**

  a) $K_1$ (from plants) - Phytonadione

  b) $K_2$ (Produced by bacteria) - Menaquinones

  C) K3 (Synthetic) - Menadione
- *Half life of vit K is 72 hours* - Mahenderbhan Singh $5^{th}$/e - 348
- *lit K acts as a cofactor at a late stage in the synthasis of coagulation factors by liver - Prothrombin (factor II), Factor VII, IX and X (also protein 'C' & Protein '8").*
- It catalyzes the final step in activation of these factors i.e. *gamma carboxylation of glutamate residues* which confers on them the capacity to bind $Ca^{+2}$ and to get bound to phospholipids surfaces - properties essential for participation in the coagulation cascade.

**583.**

# Drugs for paralytic ileus for bowel resection surgery are all except ?

a) Alvinopam

b) Dihydroergotamine

c) Naloxone

d) Methylnaltrexone

Correct Answer - C

**Ans. is 'c' i.e., Naloxone**

**Pharmacologic Management of Post op paralytic ileus (P01):**

- Minimizing the sympathetic inhibition of gastrointestinal motility, decreasing inflammation and stimulation of gastrointestinal 11-opioid receptors are the ultimate goals of pharmacologic management.

**A) Minimizing sympathetic inhibition**

- Both propranolol, a nonspecific 13-receptor antagonist, and dihydroergotamine, an a-receptor antagonist, have been investigated for treatment of POI.
- Neostigmine is an acetylcholinsterase inhibitor that causes an increase in cholinergic (parasympathetic) activity in the gut wall, which is believed to thereby stimulate colonic motility.
- Use of edrophonium chloride and bethanechol chloride, which competitively inhibit acetylcholine on the binding site of acetylcholinesterase, has been reported to show improvement of POI.
- Cisapride is a serotonin (5-HT)4 receptor antagonist that promotes acetylcholine release from postganglionic nerve endings in the myenteric plexus and is thought to indirectly improve gastrointestinal motility.
- Metoclopramide is suspected to enhance gastrointestinal motility

without stimulating gastric secretion, but its use has not been substantiated for POI.

**B) Decreasing inflammation**

- Decreasing inflammation may be indicated in patients who are about to undergo major intestinal surgery, as this is thought to be an important contributing factor to POI.
- Nonsteroidal anti-inflammatory (NSAIDs) agents can be used in conjunction with opioid analgesics for their dual effects on pain control and inflammatory inhibition.

**C) Stimulation of gastrointestinal iii-opioid receptors**

- Stimulation of gastrointestinal .1-opioid receptors can theoretically influence gastrointestinal motility directly; therefore, blocking the peripheral gastrointestinal effects of centrally acting opioids used for analgesia may help prevent POI.
- Two novel drugs are being investigated for this reason: alvimopan and methylnaltrexone.
- Both drugs are If-opioid receptor antagonists, and both appear to offer promising results for preventing prolonged POI.
- Opioid therapy for postoperative or chronic pain is frequently associated with adverse effects, the most common being dose-limiting and debilitating bowel dysfunction, so alvimopan and methylnaltrexone may also be useful in the treatment of chronic opioid bowel dysfunction.
- The currently available opioid antagonists such as naloxone are of limited use because they also act at central opioid receptors to reverse analgesia and elicit opioid withdrawal.
- Alvimopan and methylnaltrexone are peripherally acting if-opioid receptor antagonists that have been studied in patients undergoing abdominal and pelvic surgery and have been shown in several studies to significantly accelerate gastrointestinal recovery. Alvimopan received FDA approval for the treatment of POI on May 20, 2008.

**D) Alternative medications**

- Bisacodyl administration versus placebo twice daily starting on postoperative day 1, patients who received bisacodyl had significantly earlier bowel movements than those who received placebo (25 h v. 56 h), but further studies are needed to assess the

effect of laxatives on POI.

## 584. Drugs causing peptic ulcer are all except ?

a) Clopidogrel

b) NSAID

c) Mycophenolate mofetil

d) Propylthiouracil

Correct Answer - D
Ans. is 'd' i.e., Propylthiouracil
Drug/Toxin causing peptic ulcer disease:
Bisphosphonates
Chemotherapy
Clopidogrel
Crack cocaine
Glucocorticoids (when combined with NSAIDs)
Mycophenolate mofetil
Potassium chloride

## 585. The commonest side-effect of Cisapride is -

a) Abdominal cramps

b) Diarrhea

c) Headache

d) Convulsions

Correct Answer - B
Ans. is 'b' i.e., Diarrhea
*Cisapride is a prokinetic agent and often produces loose stools (diarrhea is thus the commonest side effect)*

## 586. Drug not acting on P2y12 receptor is ?

a) Ticlopidine

b) Clopidrogel

c) Dipyridamole

d) Prasugrel

Correct Answer - C
Ans. is 'c' i.e., Dipyridamole

- Dipyridamole: inhibits phosphodiesterase as well as blocks uptake of adenosine to increase platelet cAMP which in turn potentiates PGI2 and interferes with aggregation.
- Ticlopidine, Clopidogrel and prasugrel act on the P2y12 receptor and inhibits ADP as well as fibrinogen induced platelet aggregation.
- **Note:** Prasugrelis the latest most potent and fastest acting P2Y12 purinergic receptor blocker. It is used in acute coronary sydromes and when strong antiplatelet action is required).

## 587. Active substance in Dakins skin dressing agent used in burns is ?

a) Mafenide acetate

b) Silver sulfadiazine

c) Sodium hypochlorite

d) Nystatin

Correct Answer - C

**Ans.C. Sodium hypochlorite**

- Dakin's skin dressing agent contains sodium hypochlorite'
- It is used for superficial and deep burns.

## 588. Omalizumab is ?

a) Anti IgM antibody

b) AntiIgG antibody

c) Anti IgE antibody

d) Anti IgD antibody

Correct Answer - C
Ans. is 'c' i.e., Anti IgE antibody

## 589. Nicotinic acid ?

a) Increases HDL

b) Increased triglyceride synthesis

c) Type II hyperlipoproteinemia

d) Decreased hydrolysis of VLDL

Correct Answer - A

**Ans. is 'a' i.e., Increases HDL**

**Nicotinic acid (Niacin)**

- There arc three main type of lipases related to metabolism of lipoproteins ?

1. *Lipoprotein lipase* → Present in blood vessels and causes hydrolysis of tryglyceride content of VLDL and chylomicrones.
2. *Hepatic lipase* → Converts IDL to LDL by hydrolysing the triglyceride content of IDL.
3. *Hormone sensitive lipase* → Present intracellularly in peripheral tissue and causes intracellular lipolysis by hydrolysing triglycerides.

- Niacin (Nicotinic acid) inhibits intracellular lipolysis by inhibiting hormone sensitive lipase → intracellular FFA to liver - 4 .1, triglyceride synthesis.
- Niacin also increases the activity of lipoprotein lipase → T hydrolysis of VLDL triglyceride.
- Nicotinic acid also reduces the production of VLDL in liver by inhibiting TG-synthesis → indirectly the VLDL degradation products IDL and LDL are also reduced.
- *Nicotinic acid is the most effective drug to raise HDL-CH.*
- *Increased HDL* is due to interference of direct pathway of HDL cholesterol to liver which involves *apo-*$A_i$ → Niacin decreases apo-A, mediated hepatic clearance.

- Nicotinic acid is used in type I, III, IV & V hyperlipoproteinemias.

## 590. Drug that decreases LpA in blood ?

a) Statin

b) Nicotinic acid

c) Ezetimibe

d) CETP inhibitors

Correct Answer - B
Ans. is 'b' i.e., Nicotinic acid

- Nicotinic acid reduces Lp(a) while statins do not have any effect on Lp(a).

## 591. Platelet adhesion is inhibited by ?

a) Nitric oxide

b) Substance P

c) Thrombin

d) IL 2

Correct Answer - A
**Ans. is 'a' i.e., Nitric Oxide**

## 592. Which of the following is the longest acting oral anticoagulant ?

a) Bishydroxycoumarin

b) Warfarin

c) Acenocoumarol

d) Phenindione

Correct Answer - A
Ans. is 'a' i.e., Bishydroxycoumarin
*Bishydroxycoumarin (Dicumarol) is the longest acting oral anticoagulant.*
*Ethylbiscoumacetate is the shortest acting anticoagulant.*

## 593. Methysergide is banned as it causes ?

a) Pulmonary fibrosis

b) Pleural effusion

c) Syncope

d) Myocarditis

Correct Answer - A
**Ans. is 'a' i.e., Pulmonary fibrosis**
**Methysergide**

- It is chemically related to ergot alkaloids and antagonizes the action of serotonin on smooth muscles including that of blood vessels, withot producing ergot like effects.
- It is a potent 5HT2A/2C antagonist.
- It has been used for migraine prophylaxis, carcinoid and postgastrectomy dumping syndrome.
- *Prolonged use has caused abdominal, pulmonary and endocardial fibrosis,* because of which it has gone into disrepute.

## 594. Which of the following is a univalent direct thrombin inhibitor?

a) Argatroban

b) Hirudin

c) Bivalirudin

d) Lepirudin

Correct Answer - A
**Ans. is 'a' i.e., Argatroban**
**Direct thrombin inhibitors (DTIs)**

- This is a class of medications that act as anticoagulants by directly inhibiting the thrombin (unlike heparin which inhibits thrombin indirectly through antithrombin → so, heparin is an indirect thrombin inhibitor).

## 595. Streptokinase causes increase in ?

a) Plasmin

b) Thrombin

c) Kallikrein

d) Angiotensin II

Correct Answer - A
**Ans. is 'a' i.e., Plasmin**
**Streptokinase**

- Fibrinolytic drug
- Obtained from group C streptococci
- Streptokinase is inactive as such. It combines with' circulating plasminogen molecules to form an activator complex, which then causes limited proteolysis of other plasminogen molecules to generate active enzyme plasmin.

## 596. LT antagonists are used in asthma for ?

a) Along with beta agonists to reduce steroids

b) In place of beta blockers as sole therapy

c) Prophylactic therapy for mild to moderate asthma

d) Definitive therapy in acute attack of asthma

Correct Answer - C
Ans. is 'c' i.e., Prophylactic therapy for mild to moderate asthma
*Monteleukast* and *zafirleucast* are cystenyl $LT_1$ (cys $LT_1$) receptor antagonists.
They are indicated for prophylactic therapy of mild to moderate asthma as alternatives to inhaled glucocorticoids.

## 597. Following is true about iron dextran except ?

a) It is parenteral iron preparation

b) It can be given either iv or im

c) It binds to transferrin

d) It is not excreted

Correct Answer - C
Ans. is 'c' i.e., It binds to trnasferrin

## 598. Compared to high molecular weight heparin following is true about low molecular weight heparin ?

a) Monitoring is not needed for low molecular weight heparin

b) Daily two subcutaneous doses are essential

c) They are easily filtered at the glomerulus

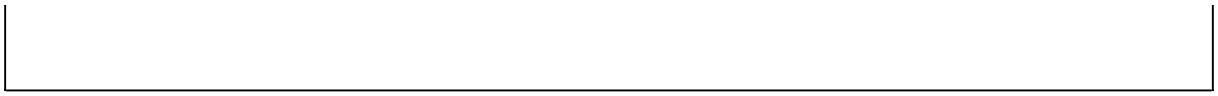
d) They do not interact with plasma proteins

Correct Answer - B

**Ans. is 'b' i.e., Daily two subcutaneous doses are essential**

**<u>Advantages of LMWH</u>**

- Longer, more consistent and predictable response —> *Single daily dose is sufficient by subcutaneous route.* o Lower risk of osteoporosis and HIT syndrome.
- *Bleeding chances are less :* LMW heparins have a different anticoagulant profile.
- They selectively inhibit factor Xa with little effect on antithrombin and coagulation in general.
- They act only by inducing conformational change in AT III.
- They appear to have lesser antiplatelet action.
- As a result they have a small effect on a PTT and whole blood clotting time.
- *Since a PTT/clotting times are not prolonged (much) laboratory monitoring is not needed, and the incidence of haemorrhagic complication is less.*
- They are easily filtered from glomerular capillaries because of there smaller molecular weight.
- *LMW heparins do not interact with plasma proteins.*



## 599. Prophylactic dose of vitamin K given to new born infants at delivery is ?

a) 1mg

b) 5mg

c) 10mg

d) 15mg

Correct Answer - A
Ans. is 'a' i.e., 1 mg
***Vitamin* K Deficiency in Newborns**

- The symptoms of vitamin K deficiency are due to hemorrhage
- Newborns are particularly susceptible to vitamin K deficiency because of low fat stores, low breast milk levels of vitamin K, sterility of the infantile intestinal tract, liver immaturity, and poor placental transport.
- Intracranial bleeding, as well as gastrointestinal and skin bleeding, can occur in vitamin K-deficient infants 17 days after birth.
- Thus, vitamin K (1 mg IM) is given prophylactically at the time of delivery.

**600. Which of the following is not an anti histaminic drug of the ethanolamine group?**

a) Clemastine

b) Diphenhydramine

c) Dimenhydrinate

d) Chlorpheniramine

Correct Answer - D

**Ans. is d i.e., Chlorpheniramine**

**Ethanolamine derivative group of antihistaminics are:**

- Carbinoxamine maleate
- Clemastinefumarate
- Diphenhydrmine HC1
- Dimenhydrinate

## 601. All of the following can precipitate porphyria except ?

a) Steroids

b) Griesiofulvin

c) Penicillin

d) Estrogen

Correct Answer - C
**Ans. is 'c' i.e., Penicillin**
*Penicillin is a safe drug in acute intermittent porphyria*
**Drugs precipitating acute intermittent porphyria**

- *Barbiturates*
- *Griseofulvin*
- *Chlorpropramide*
- *Rifampicin*
- *Oral contraceptives*
- *Estrogen*
- *Phenytoin*
- *Sulfonamides*

## 602. Heparin activates following factors except ?

a) IIa

b) VIIa

c) IXa

d) Xa

Correct Answer - B

**Ans. is `b' i.e., Villa**

**Chemical nature and preparation of Heparin**

- Heparin is a sulfated mucopolysaccharide which occurs in the secretory granules of mast cells.
- *It is the strongest organic acid in the body and in the solution it carries an electronegative charge.*
- It is prepared commercially from a variety of animal tissues (generally *porcine intestinal mucosa* or *bovine lung).*

**Mechanism of Action of Heparin**

- Heparin acts by *activating antithrombin* which is a naturally occuring inhibitor of activated coagulation factors of intrinsic and common pathway.

## 603. Bromocriptine is used in following clinical situations except ?

a) Type II DM

b) Hepatic Coma

c) Cyclical mastalgia

d) Hypoprolactinemia

Correct Answer - D

**Ans. is `d' i.e., Hypoprolactinemia**

**Uses of Bromocriptive**

- Bromocriptine is a powerful *dopamine agonist.* It *suppresses prolactin secretion* while promoting secretion of gonadotropins.
- **Its therapeutic uses are:**

i. *Suppression of lactation in galactorrhea*
i. *Cyclical mastalgia*
i. *Induction of ovulation in anovulatory infertility caused by hyperprolactinemia*
*. *Parkinsonism*
*. *Acromegaly due to small pitutary tumours*
i. *Hepatic coma*
i. Recently, *it has been approved for treatment of type 2 DM.*

## 604. Following is true about GnRH agonists except ?

a) Used in cases of precocious puberty

b) They have action similar to gonadotropin releasing hormone

c) Long acting preparations can be used as nasal spray

d) Ganirelix is the most potent agent

Correct Answer - D

**Ans. is 'd' i.e., Ganirelix is the most potent agent**

**GnRH agonists**

- Long acting GnRH (LHRH) agonists causes reversible pharmacological orchiectomy (medical castration) and are used for precocious puberty, prostatic carcinoma, endometriosis, premenopausal breast cancer, uterine leiomyoma, polycystic ovarian disease and to assist induced ovulation.
- *GnRH agonists have action similar to Gonadotropin releasing hormone, i.e., they increase the secretion of gonadotropins (FSH, LH).*
- *Then how do they suppress gonadol function ? Lets see.*
- GnRH agonists increases Gn secretion.
- But after 1-2 weeks they cause desensitization and down-regulation of FSH/LH receptors. (continous exposure to agonist may cause down regulation of receptors) —> suppression of gonadal function.
- Spermatogenesis/ovulation cease and testosterone/estrogen levels fall to castration level because the action of Gonadotropins (FSH & LH) is not there (these hormones promote gametogenesis and secretion of gonadal hormones).
- Preparation of superactive GnRH analogues are —> *Busereline, Goserelin, Leuprolide, Nafarelin, Triptorelin.*

- Superactive/Long acting GnRH are used as *nasal spray* or SC injection.
- *Cetrorelix, ganirelix* and *abarelix* are GnRh antagonists. These are used subcutanously for the treatment of *uterine fibroid & endoinetriosis* and for controlled ovarian stimulation in *in-vitro fertilization.*
- GnRh agonists as well as GnRh antagonists can cause *hot flushes, loss of libido and osteoporosis* as adverse effects.

**605. Female on carbimazole therapy presents with sudden fever, rigors and sore throat. Which is the investigation of choice for this patient?**

a) Check blood counts

b) Check C reactive protein

c) Take throat Swab

d) Treat for malaria

Correct Answer - A
Ans. is 'a' i.e., Check blood counts
The most common side effect of carbimazole is maculopapular pruritic rash, while most serious adverse effect is agranulocytosis which is reversible.
Patient in the given question presents with sudden onset fever, rigors and sore throat. Infection of any site which is sudden onset and rapidly progressive in a patient on carbimazole therapy the suspicion should be development of agranulocytosis, so it is essential to do blood counts.

## 606. HbA1C is decreased most by?

a) Biguanides

b) Sulfonylureas

c) Thiazolidinediones

d) Acarbosc

Correct Answer - B
Ans. **is 'b' i.e.,** Sulfonylureas
Effect of oral hypoglycemic in lowering blood glucose can be measured by reduction in HbAlC level
i) *Oral hypoglycemic with maximum decrease in HbAlc sulfonylureas.*
ii)Oral *hypoglycemic with minimum decrease in HbAIC Glucosidase inhibitors (Acrarbose, Migital)*

## 607. Cabergoline is used in -

a) Acromegaly

b) Hyperprolactinoma

c) Both a and b

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Both a and b**

- *Prolactin is physiologically involved in lactation.* In a breast which has been primed by female hormones (estrogen and progesteron), prolactin induces and maintains lactation by stimulating synthesis of milk. **Prolactin is the only pituitary hormone which is primarily under the inhibitory control of hypothalamus. Its secretion is inhibited by dopamine (prolactin inhibiting substance) through $D_2$ receptors.** Therefore, dopamine agonists inhibit prolactin release, and D, antagonists (antipsychotics, metoclopromide) cause hyperprolactinemia.
- o **Bromocripitine,** a *synthetic ergot,* **is a potent dopamine agonist with greater action on $D_2$ receptors. On Di receptors** it acts as partial agonist or antagonist. It also has a weak **a-adrenergic blocking action.** Bromocriptine **decreases** (i) **Prolactin secretion,** (ii) **GI motility,** and (iii) GH secretion in acromegaly. It stimulates CTZ to cause nausea and vomiting. It is used in **hyperprolactinemia, suppression of lactation in galactorrhea,** cyclic mastalgia, parkinsonism, **acromegaly,** hepatic coma, and type 2 DM (recently approved).
- **Cabergoline** is another **$D_2$** agonist, which is more potent and longer acting than bromocriptine. It is preferred **for** *acromegaly and*

*hyperprolactinemia.* **Quinagolide,** other D, agonist, its effective for hyperprolactinemia.

## 608. Tamoxifene ?

a) SSRI

b) SERM

c) SNRI

d) DNRI

Correct Answer - B
Ans. is `b' i.e., SERM
Tamoxifen is a selective estrogen receptor modulator (SERM).

## 609. Letrozole belongs to which group?

a) SERM

b) SERD

c) LHRH analogues

d) Aromatse inhibitors

Correct Answer - D
Ans. is 'd' i.e., Aromatase inhibitors
**Aromatase inhibitors**

- Aromatase inhibitors are drugs which inhibit the enzyme Aromatase.
- Aromatase is an enzyme responsible for the conversion of testosterone (androgens) to estrogens.
- This conversion of androgens to estrogens occur in several tissues including ovary, adrenal cortex, peripheral tissues.
- Inhibition of Aromatase leads to decrease in estrogen level.
- Aromatase inhibitors prevent the conversion of androgens to estrogens only in postmenopausal women, not in premenopausal women.
- In *premenopausal women, as the level of estrogens decrease it activates the pituitary hypothalamic axis.* Activation of pituitary hypothalamic axis *leads to increased secretion of pituitary gonadotropins.* The pituitary gonadotropins *inturn increase the secretion of estrogens.* Thus the estrogen level returns back to their normal level.
- On the other hand aromatase inhibitors effectively decrease the secretion of estrogen in postmenopausal women.
- In postmenopausal women, the production of estrogen from androgens occurs, only in extraovarian sites such as peripheral tissues where the conversion of androgens to estrogens is blocked

by aromatase inhibitors.

- Use of aromatase inhibitors
- Aromatase inhibitors are used in the t/t of Hormone receptor positive breast carcinomas in postmenopausal women. They are not effective in premenopausal women.
- *How are Aromatase inhibitors useful in Breast carcinomas ?*
- In breast carcinomas, estrogen delivers growth signals to the hormone receptors. The hormone receptors upon receiving the growth signals, cause the proliferation of tumor cells.
- After the inhibition by aromatase inhibitors, estrogen level decreases, this leads to lesser delivery of growth signals and in turn lesser proliferation of tumor cells.
- Aromatase inhibitors are of two types :
- Type I (steroidal) aromatase inhibitor - They cause irreversible inhibition of aromatase, e.g. Exmestane, formestane.
- Type II (non-steroidal) aromatase inhibitor - They cause reversible inhibition of aromatase e.g. Anastrazole, Letrozole, vorozale.
- Above classification is based on chemical structure (steroidal or non-steroidal) and type of inhibition (reversible or irreversible). Based on the evolution the aromatase inibitors arc:

i. First generation → Aminoglotethimide
i. Second generation → Steroidal type I (Example, formestane), non-steroidal type II (Anastrazole, Letrozole, Vorozole, fadrozole)

- Side effects - Hot flushes, nausea, diarrhoea, dyspepsia, thinning of hair and *Joint Pain (Arthralgia) and increased risk of fracture.*
- There is no endometrial proliferation (no risk of endometrial carcinoma), no risk of venous thromboembolism and no deterioration of lipid profile.

**Remember**

- Anastrozole and letrozole are nonsteroidol compound, while exemestane is steroidol. o Exemestane also has weak androgenic activity.
- Anastrozole is more potent than letrozole.
- First generation aromatase inhibitors → Aminoglutethimide.
- Second generation aromatase inhibitors → Letrozole, anastrozole, fadrozole and exemestone.

## 610. DMPA is given once in -

a) 3 months

b) 6 months

c) 9 months

d) 45 days

Correct Answer - A

**Ans. is 'a' i.e., 3 months**

**HORMONAL CONTRACEPTIVES**

These are hormonal preparations used for reversible suppression of fertility.

Types of methods

**A. Oral**

- Combined pill (monophasic pills)
- It contains an estrogen and a progestin.
- *This is the most effective and popular method.*
- Efficacy is 98-99%

**Preparation are -**

- Ethinyl estradiol 30 pg (•03 mg) + Norgestrel 0·3 mg
- Ethinyl estradiol 50 .tg (•05 mg) + Levonorgestrel 0·25 mg
- Ethinyl estradiol 30 pig (•03 mg) + Desogestreol 0·15 mg
- *One tablet (containing estrogen and progesterone) is taken daily for 21 days starting on 5[1]"day of mensturation.*

**Phased regimens**

- The estrogen dose is kept constant (or varied slightly between 30-40 mg), while the amount of pregestin is low in first phase and progressiely higher in the second and third phases.

**Preparations are**

**Biphasic pills**

- Day 1-10 → Ethinyl estradiol 35 mg + Norethindrone 0·5 mg
- Day 11-21 → Ethinyl estradiol 35 mg + Norethindrone 1 mg.

**Triphasic pills**

- Day 1-7 → Ethinyl estradiol 35 mg + Norethindrone 0·5 mg
- Day 8-14 →Ethinyl estradiol 35 mg + Norethindrone 0·75 mg
- Day 15-21 → Ehinyl estradiol 35 mg + Norethindrone 1 mg
- Minipill (progestin only pill)
- A low dose progestin pill is taken daily without any gap.
- Preparations → Norethindrone (0·35 mg) or Norgestrel 75 mg.
- Postcoital (emergency) pills.

*a)* Levonorgestrel 0·5 mg + ethinyl estradiol 0·1 mg —> within 72 hours of unprotected intercourse and repeated after 12 hours - *Yuzpe method.*

*b)* Levonorgestrel alone 0·75 mg taken twice with 12 hour gap within 72 hours of unprotected intercourse → *method of choice for emergency contraception.*

c) Mifepristone 600 mg single dose within 72 hours of unprotected intercourse.

**B. Injectable**

They are given i.m. as oily solution

1.Long *acting progestin alone*

a) Depot medroxy progesterone acetate (DMPA) 150 mg at 3 month intervals. or

b) Norethindrone (norethisterone) enanthate (NEE) 200 mg at 2 months intervals.

*c) The most important undesirable property is complete disruption of menstural bleeding pattern and total amenorrhoea (more common with DMPA).*

*2.Long acting progestin + long acting estrogen* - once a month.

## 611. Pramlintide is ?

a) Synthetic amylin analogue

b) Inhibitor of DPP 4

c) GLP 1 analogue

d) PPAR gamma

Correct Answer - A

**Ans. is 'a' i.e., Synthetic amylin analogue**

**NEWER ANTIDIABETIC DRUGS**

***Exenatide***

- *Exenatide is a synthetic glucagon-like peptide - 1 (GLP-1) analogue.*
- GLP-1 is an important incretin that is released from gut in response to oral glucose.
- But GLP-1 can not be used clinically as it is degraded rapidly by enzyme *dipeptidly peptidase → (DPP-4).*
- Exenatide is resistant to DPP-4.
- It acts similar to GLP-1 → Enhancement of postprandial insulin release, suppression of glucagon release and appetite as well as slowing of gastric emptying.
- *It is given by subcutaneous route & used in type 2 DM*
- *Nausea is most important side effect.*

***Sitagliptin***

- This is *orally active inhibitor of DPP-4.*
- It prevents degradation of endogenous GLP-1 and other incretins, potentiating their action, resulting in limitation of postprandial hyperglycemia.
- It is used in *type 2 DM.*
- Other DPP-4 inhibitor is vildagliptin

***Pramlintide***

- This is a *synthetic amylin analogue* (Amylin is a polypeptide produced by pancreatic (3-cells which reduces glucagon secretion from a-cells and delays gastric emptying).
- Pramlintide attenuates postprandial hyperglycemia and exerts a centrally mediate anorectic action. o It is given by subcutaneous route and is used in *both Type 1 and Type 2 DM.*

***Glucomannan***

- This is powdered extract from tuber of konjar.
- It is promoted as a dietary adjunct for diabetes.
- It swells in stomach by absorbing water and is claimed to reduce appetite, blood sugar, serum lipids and relieve constipation.

**Bromocriptine**

- Recently bromocriptine has been approved by FDA, as an adjunct to diet and exercise to improve glycemic control in type 2 DM. It has been found that dopamine alter insulin resistance by acting on hypothalmus and bromocriptine blocks $O_2$ receptors.

## 612. Which drug prevent peripheral conversion of $T_4$ to $T_3$ -

a) Propylthiouracil

b) Propranolol

c) Iodides

d) a and b both

Correct Answer - D
Ans. is 'a' i.e., Propylthiouracil & 'b' i.e., Propranolol

## 613. 1, 25 dihydrocholecalciferol acts on ?

a) Surface receptors

b) Cytosolic receptors

c) Intranuclear receptors

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Intranuclear receptors

## 614. Dose of centchroman is ?

a) 30 mg

b) 60 mg

c) 120 mg

d) 240 mg

Correct Answer - A
**Ans. is 'a' i.e., 30 mg**
**Cetchroman (Saheli)**

- Ormeloxifene, research product of Central Drug Research Institute, Lucknow, India.
- It is a potent non - steroidal compound with potent anti - estrogenic and weak estrogenic properties. It is taken orally (30 mg) twice a week for first three months then once a week.
- It works primarily by preventing implantation of fertilized ovum. It does not inhibit ovulation.
- It is avoided in PCOD, with liver and kidney diseases and in tuberculosis. There may be a tendency of oligomenorrhoea.
- The failure rate is 1 - 4/100 woman years of use. Failure rate is less with increased doses. It is devoid of any significant adverse metabolic effect.
- This may also be used as a emergency contraceptive.

## 615. Reason for hepatic involvement in oral contraceptives is ?

a) Estrogen

b) Progesterone

c) Estrogen +Progesterone

d) Mixed trace elements

Correct Answer - A

**Ans. is 'a' i.e., Estrogen**

**Hepatotoxicity with oral contraceptive pills**

- While early formulations of OCPs were associated with frequent serum enzyme elevations, current formulations and hormonal replacement therapy have not been linked to ALT or alkaline phosphatase elevations at rates any higher than occur with placebo.
- Estrogens in OCPs can cause mild inhibition of bilirubin excretion leading to jaundice in patients with inherited forms of bilirubin metabolism such as the Dubin Johnson syndrome.
- It can induce a clinically apparent cholestatic liver injury which typically arises during the first few cycles of therapy, and rarely after the six months.
- It has also been linked to hepatic tumors, both benign and malignant.

## 616. Incretin like function is seen in ?

a) Exenatide

b) Miglital

c) Poiglitazone

d) Repaglinide

Correct Answer - A
Ans. is 'a' i.e., Exenatide

- Exenatide is a synthetic glucagon-like peptide - 1 (GLP-1) analogue.
- GLP-1 is an important incretin that is released from gut in response to oral glucose.
  - But GLP-1 can not be used clinically as it is degraded rapidly by enzyme dipeptidly peptidase → (DPP-4).
- Exenatide is resistant to DPP-4.
  - It acts similar to GLP-1 → Enhancement of postprandial insulin release, suppression of glucagon release and appetite as well as slowing of gastric emptying.
- It is given by subcutaneous route & used in type 2 DM
- Nausea is most important side effect.

## 617. Which is a long acting insulin?

a) Lispro

b) Aspart

c) Glargine

d) Glulicine

Correct Answer - C
Ans. is 'c' i.e., Glargine

## 618. Special feature of glargine insulin is ?

a) It produces a smooth peakless effect

b) It is not suitable for once daily administration

c) It remains souble at pH 7

d) It can control meal time hyperglycemia

Correct Answer - A

**Ans. is 'a' i.e., It produces a smooth peakless effect**

**InsuinGlargine**

- It is long acting biosynthetic insulin.
- It remains soluble at pH 4 of the formulation and precipitates at neutral pH on subcutaneous administration.
- Onset of action is delayed.
- It produces a smooth peakless effect.
- It is suitable for once daily administration.
- Low incidence of night time hypoglycemia.
- It does not control meal time yperglycemia.

## 619. Long acting corticosteroid is ?

a) Triamcinolone

b) Betamethasone

c) Hydrocortisone

d) Prednisolone

Correct Answer - B
Ans. is 'b' i.e., Betamethasone

- *Short acting glucocorticoids (t1/2 : 8-12 hrs.) : Cortisol, hydrocortisone.*
- *Intermediate acting glucocorticoids (t1/2 : 12-36 hrs.) : Prednisolone, methylprednisolone, triamcinolone.*
- *Long acting glucocorticoids (t1/2 :* 36-54 *hrs.) : Dexamethasone, betamethasone.*

## 620. Adrenocortical suppression causing drugs are all except ?

a) Prednisone

b) Ketoconazole

c) Mitotane

d) Spironolactone

Correct Answer - D
Ans. is 'd' i.e., Spironolactone
**Drugs causing adrenocortical suppression are:**

- Steroids (prednisone, hydrocortisone, and dexamethasone)
- Aminoglutethimide
- Fludrocortisone
- Ketoconazole
- Megestrol
- Metyrapone
- Mitotane

## 621. Drug which decreases efficacy of testosterone

a) Isoniazid

b) Ketoconazole

c) Rifampicin

d) None

Correct Answer - B
Ans. is 'b' i.e., Ketoconazole

## 622. Danazol has which of the following actions ?

a) Weak androgenic

b) Progestational

c) Anabolic

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

**Danazole**

- It has *weak androgenic, anabolic* and *progestational* activity.
- *The most prominent action is suppression of gonadotropin (FSH/LH) from pitutary* in both men and women → inhibition of testicular/ovarian function.

**Uses are :**

1. Endometriosis (major use)
2. Fibrocystic breast disease
3. Infertility
4. Menorrhagia
5. Hereditary angioneuretic edema

Side effects are *complete amenorrhoea, androgenic effects* (acne, hirusitism, decreased breast size, deepening of voice, edema, weight gain), loss of libido in men, hot flushes in women, night sweats and muscle cramp.

Liver enzyme may be raised.

## 623. Fastest acting antithyroid drugs ?

a) Iodides of Na/ K

b) Propylthiuracil

c) Methimazole

d) Nitrates

Correct Answer - A

**Ans. is 'a' i.e., Iodides of Na**

**Iodine and Iodides**

- Iodine is the fastest acting thyroid inhibitor
- Most important action is inhibition of hormone release (thyroid constipation); but all facets of thyroid synthesis may be affected.
- Excess iodide inhibits its own transport in thyroid cells and may alter the redox potential of cells, thus interfering iodination → reduced T4/T3 synthesis (Wolff-chaikoff effect).

## 624. Mechanism of action Trilostane ?

a) 11 beta hydroxylase inhibitor

b) 1 alpha hydroxylase inhibitor

c) 3 betahydroxysteroiddehydrgenase inhibitor

d) 7 alpha hydrolase inhibitor

Correct Answer - C
Ans. is 'c' i.e., 3 beta hydroxyl steroid dehydrogenase inhibitor

## 625. Insulin secretion increasing drug by acting on beta cells of pancreas is -

a) Rapaglinide

b) Metformin

c) Poiglitazone

d) Acarbose

Correct Answer - A

**Ans. is 'a' i.e., Rapaglinide**

Oral hypoglycemic drugs may be divided into two groups.

**1. Group 1**

These drugs reduce plasma glucose by stimulating insulin production, therefore called *insulin secretogogues.*

*Hypoglycemia is a well known side effect.*

**Examples are:**

*i) Sulfonylureas:* first generation (chlorpropamide, tobutamide); second generation *(Glimipiride,* glyburide, glipizide, gliclazide).

*ii) Megalitinnide/D-phenylalanine analogues: Nateglinide, Rapaglinide.*

**2. Group 2**

These drugs reduce blood glucose without stimulating insulin production, therefore are insulin nonsecretogogues.

*These durgs do not cuase hypoglycemia when used alone* and can cause hypoglycemia, only when used with other oral hypoglycemics.

**Examples are:**

*i) Biguanides:* Metformin, Phenformin

*ii) Thiazolidinediones:* Rosiglitazone, Pioglitazone, Troglitazone.

*iii) a - glucosidase inhibitors: Acarbose,* miglital.

## 626. Bevacizumab is used in ?

a) Carcinoma colon

b) Liver carcinoma

c) Renal cell carcinoma

d) Pancreatic carcinoma

Correct Answer - A
Ans. is 'a' i.e., Carcinoma colon

## 627. Bevacizumab is ?

a) Anti VEGF antibody

b) Histone decyclase inhibitor

c) Proteosome inhibitor

d) Her2 neu inhibitor

Correct Answer - A
Ans. is 'a' i.e., Anti VEGF antibody

## 628. Which of the following anticancer drugs are competitive inhibitors of tyrosine kinase ?

a) Imatinib and sunitinib

b) Letrozole

c) Bicalutamide

d) Fulvestrant

Correct Answer - A

**Ans. is 'a' i.e., Imatinib and sunitinib**

**Molecular targeted agents**

- *Tyrosine kinase inhibitors*
- *Competitive inhibitors* → Imatinib, Nilotinib, Sunitinib, Dasatinib, Erlotinib, Gefitinib, Lapatinib, Sorafenib (Remember all end with ' *nib').*
- *Monoclonal antibodies* → Cetuximab, panitumumab.
- *$HER_2$/neu (ERB $B_2$) inhibitors* Monoclonal antibody - Trastuzumab.
- *Targeted antibody* → Gemtuzumab (anti CD-33), Rituximab (anti - CD20), Alemtuzumab (anti CD-52).
- *Vascular endothelial growth factor (VEGF) inhibitor* → Monoclonal antibody - Bevacizumab.
- *Proteosome inhibitors* → Bortezomib.
- *Histone deacetylase inhibitor* → Vorinostat
- *DNA - methyltransferase inhibitor* → 5-azacytidine, 2-deoxy-5 azacytidine.
- *All - trans-retinoic acid.*
- *Biological response modifier* - Recombinant IL-2 (aldesleukin, denileukin).

## 629. Thalidomide is used in ?

a) Mutilple myeloma

b) Squamous cell carcinoma

c) Basal cell carcinoma

d) Masopharyngeal carcinoma

Correct Answer - A
**Ans. is 'a' i.e., Multiple myeloma**
**Clinical uses of thalidomide**

- AIDS related aphthous ulcers
- AIDS related wasting syndrome
- Multiple myeloma and other solid tumours
- Prevention of graft versus host disease after transplantation
- Rheumatoid arthritis
- Ankylosing spondylitis
- Crohn's disease and Bechet's syndrome
- Erythema Nodusum Leprosum

## 630. Daclizumab acts through ?

a) cGMP activation

b) Adenylcyclase inhibition

c) IL 2 receptor blocker

d) IL10 receptor blocker

Correct Answer - C
**Ans. is 'c' i.e., IL 2 receptor blocker**

- Monoclonal antibodies (daclizumab and basiliximab) that block the interleukin 2 receptor and are used in prevention of graft rejection as immunosuppresant.

## 631. Mechanism of action of actinomycin D is ?

a) Inhibits DNA dependent RNA synthesis

b) Activates DNA dependent RNA synthesis

c) Inhibits RNA dependent DNA synthesis

d) Activates RNA dependent DNA synthesis

Correct Answer - A

**Ans. is 'a' i.e., Inhibits DNA dependent RNA synthesis**

**The anticancer antibiotics are**

- Actinomycin - D (Dactinomycin)
- Daunorubicin (Rubidomycin)
- Mitomycin C
- Doxorubicin
- Mitoxantrone
- Mithramycin (plicamycin)
- Bleomycins
- These anticancer, antibiotics obtained from micro-organisms and have prominent antitumour activity.
- Mechanism of action : They are intercalated between DNA strands and interfere with its template function.
- Actinomycin `D' inhibits DNA dependent RNA synthesis.
- Bleomycin cause DNA breakage and free radical formation .
- Doxo-and daunorubicin inhibit Topoisomerase I & II.
- Mitomycin acts like alkylating agents.
- Mitoxantrane binds to DNA to produce strand breakage and inhibits both DNA & RNA synthesis.

**Remember**

- *All antitumor antibiotics are cell cycle nonspecific except for*

*bleomycin which acts in* $G_2$ *phase.*

## 632. Tocilizumab is antibody against ?

a) IL 2

b) IL 4

c) IL 6

d) IL 8

Correct Answer - C
**Ans. is 'c' i.e., IL 6**
**Tocilizumab**

- It is the antibody directed against IL 6 receptor

**It is approved for use in :**

i. Rheumatoid arthritis
i. Neuromyelitisoptica
i. Castleman's disease
v. Systemic juvenile idiopathic arthritis

## 633. Mechanism of action tacrolimus is ?

a) Inhibition of calcineurin

b) Antimetabolite

c) mTOR inhibitor

d) Inhibition of DNA synthesis

Correct Answer - A

**Ans. is 'a' i.e., Inhibition of calcineurin**

**Tacrolimus**

- It is a *macrolide* immunosuppressant agent.
- Its *mechanism of action* is similar to cyclosporine, i.e. *inhibition of transcription of IL-2 and T-cell proliferation,* but it binds to other immunophilin called *FKBP* (in contrast to cyclosporine which binds to cyclophilin). Subsequent steps are some, i.e. *inhibition of calcineurin,* which inhibits T cell activation.
- Tocrolimus is 10-100 times more potent than cyclosporine.
- It is also *more toxic* than cyclosporin.
- Adverse effects are *nephrotoxicity* (most common), *neurotoxicity, hyperglycemia (DM).*
- *Mechanism of nephrotoxicity → Periglomerular afferent arteriolar vasoconstrication and reduced GFR.*

## 634. Hydroxyurea mechanism of action in cancer is by inhibiting the enzyme ?

a) Ribonucleotide diphosphate reductase

b) Ribonucleotide oxidase

c) DNA lyase

d) DNA synthetase

Correct Answer - A

**Ans. is 'a' i.e., Ribonucleoside diphosphate reductase**

**Hydroxyurea**

It blocks the conversion of ribonucleotides to deoxyribonucleotides by inhibiting the enzyme ribonucleoside diphosphate reductase; thus inhibits the DNA synthesis; S phase specific.

Myelosuppression is the major toxicity. GI disturbances and cutaneous reactions (pigmentation) also occur.

It is used in CML, psoriasis, polycythemia vera and some solid tumors.

It is also used as radiosensitizer before radiotherapy and is a first line drug for sickle cell disease in adults.

## 635. Nitrosoureas used in the treatment of cancer are?

a) Carmustine

b) 5FU

c) Methotrexate

d) Cisplatin

Correct Answer - A
**Ans. is 'a' i.e., Carmustine**
**Nitrosoureas**

- Nitrosoureas (Lomustine and carmustine) are highly lipid soluble alkylating agents - cross blood - brain barrier → Effective in meningeal leukaemias and brain tumours.
- *Nitrosoureas are highly lipid soluble and can cross blood brain barrier used in brain tumors like gliomas.*
- Because they cross BBB, most common adverse effects are nausea, vomiting and other CNS effects.
- Bone marrow depression is peculiarly delayed, taking nearly 6 weeks to develop. → *delayed neutropenia*
- Nitrosoureas can cause visceral fibrosis and renal damage.

invalid question id

## 637. Nullity of marriage is considered when ?

a) Adultery in first 7 years

b) Infertility of husband

c) Assault in first 7yrs

d) Age > 55years

Correct Answer - B

**Ans. is 'b' i.e., Infertility of husband**

Under section 12 of Hindu Marriage Act 1955 or section 24 of Special Marriage Act 1954, a wife may seek divorce on the ground that her husband was impotent at the time of marriage and continues to be impotent therefore he is incapable of fulfilling the rights of consummation of marriage by an act of sexual intercourse.

**Conditions for nullity of marriage**

Any marriage can be declared null and void under following conditions:?

1) Bigamy, i.e. one spouse has made one more marriage

*2) Impotence*

3) If either party is underage

4) If one spouse is having unsound mind at the time of marriage, virulent form of leprosy or veneral disease in a communicable form.

5) If one spouse has not been heard of as being alive for a period of 7 years or undergoing a sentence of imprisonment for 7 years.

6) If the consent has been obtained by coercion or fraud.

7) If the woman already pregnant with some one else's child at the time of marriage.

## 638. WHO definition of abdominal obesity is ?

a) Waist - hip ratio > 0.80 in females

b) Waist - hip ratio > 0.85 in females

c) Waist - hip ratio > 0.90 in females

d) Waist - hip ratio > 0.95 in females

Correct Answer - B

Ans. is 'b' i.e., Waist - hip ratio > 0·85 in females

**Assessment of obesity**

Following parameters are used to assess obesity :?

**1) Skin fold thickness (SFT)**

- Since it is most accessible, *SFT is the most common method used to assess obesity.*
- Measurements are taken at 4 sites : *mid triceps (best site), biceps, subscapular and suprailiac regions.*
- *The sum of measurements _ 50 mm in girls and 240 mm in boys indicate obesity.*
- At single *mid triceps level* (best site to measure SFT), thickness 18 mm in boys and 32 mm in girls indicate obesity.
- The instrument used to estimate SFT is *Harpenden skin callipers.*

**2) Waist circumference (WC) and Waist / Hip ratio (WHR)**

- These are good predictors for metabolic complications and risk of cardiovascular disease.
- The cut-off for *waist circumference* is **102 cms in boys (for India 90 cms) and 88 cms in girls (for India . 80 cms).** *WHR > 1.0 in men and > 0·85 in women indicates obesity and abdominal fat accumulation.*

**3) Waist-Height ratio (WHtR)**

- It is the *best indicator of cardiovascular risk.* It is **independent** of

age and sex. *Cut-off value is 0.5.*

**4) Indices based on weight and/or height**

**These are *:?***

***i) Body mass index (Qetelet's index)***

- It is *used internationally as reference standard for assessing the prevalence of obesity.*
- It is *dependent both on height and weight* (has been explained earlier).

**ii) *Ponderal index***

- It is *dependent both on height and weight.*
- *It is defined as height (cm) divided by cube root of weight (kg).*

## 639. Constitution by which we can force people on hunger strike to eat is ?

a) Article 21

b) Article 35

c) Article 48

d) Article 52

Correct Answer - A
Ans. is 'a' i.e., Article 21
Indian constitution (Article 21) ensures right to life; there is no equivalent right to die. Since Indian constitution is supreme, force feeding in hunger strikers is lawful in India.

## 640. How much is punishment for sex determination ?

a) 3 years

b) 5 years

c) 7 years

d) 9 years

Correct Answer - A
Ans. is 'A' i.e., 3 years

- Since the question is about punishment for sex determination not repeat offence of sex determination answer will be 3 years
- The families of a pregnant woman who ask for sex determination are also liable to be punished.
- Not adhering to the provisions of this act could warrant punishment in the form of up to 3 years imprisonment and up to Rs 10,000 fine, and on repeat offence up to 5 years imprisonment and up to Rs 50,000 fine.
- The name of the registered practitioner would be removed from the state council for 5 years if guilty and permanently if repeat offence is committed under section 23 of the act.

## 641. A person is declared dead if not seen by relatives for how many years ?

a) 3 years

b) 7 years

c) 10 years

d) 12 years

Correct Answer - B
Ans. is 'b' i.e., 7 years

- A person is legally declared dead if not seen for 7 years from the date of declared missing.
- The Indian Evidence Act, under section 108 provides 7 years from the date whence a person is declared to be missing and his whereabouts are not known for presuming a person to be dead (Death in absentia).

**642.**

## Punishment for perjury is covered under section -

a) 191 IPC

b) 193 IPC

c) 195 IPC

d) 1971PC

Correct Answer - B
Ans. is 'b' i.e., 193 IPC

## 643. Grevious hurt comes under section:

a) 319

b) 320

c) 324

d) 326

Correct Answer - B
320

## 644. IPC 319 deals with ?

a) Definition of hurt

b) Voluntarily causing hurt

c) Definition of grievous hurt

d) Voluntarily causing grievous hurt

Correct Answer - A
Ans. is 'a' i.e., Definition of hurt

## 645. Which IPC includes vitriolage ?

a) 318

b) 319

c) 320

d) 321

Correct Answer - C
Ans. is 'c' i.e., 320
Vitriolage is a potential cause of permanent disfigurement of face and thus is covered under grevious hurt and so comes under IPC 320.
Vitriolage' is throwing of any corrosive on another person. Eyes are affected most commonly. It comes under *sector 320 IPS.*

**646.**

## Doctor who did surgery on wrong side of the pateient is punishable under section ?

a) S. 304 A IPC

b) S. WC

c) S. 305 AIPC

d) S. 305 IPC

Correct Answer - A
**Ans. is 'a' i.e., S. 304 A IPC**
**Section 304 A IPC**

- Causing death by negligence: Whosoever causes the death of any person, by doing any rash or negligent act not amounting to culpable homicide shall be punished with imprisonment for a term which may extend to 2 years or with fine, or with both.
- Doctor doing surgery on the wrong side of the patient is an example of gross inattention and recklessness shown by the doctor and is thus an example of criminal negligence.
- Criminal negligence is punishable under S. 304 A IPC.

## 647. In case of death in lock up, the inquest is held by

a) A police officer

b) Magistrate

c) Panchayat officer

d) District Attorney

Correct Answer - B
B i.e. Magistrate

## 648. Cephalic index is used for

a) Race

b) Age

c) Sex

d) Stature

Correct Answer - A
Ans. is 'a' i.e., Race

- Cephalic index, height index & nasal index are used for determination of race.
- Cephalic index = maximum breadth of skull/ maximum length of skull x 100

| Type of skull | Cephalic index | Race |
|---|---|---|
| Dolichocephalic (long headed) | 70 - 75 | Pure Aryan, Aborigines, Negroes |
| Mesaticephalic (medium headed) | 75 - 80 | Europeans and Chinese |
| Brachycephalic (short headed) | 80- 85 | Mongolian |

## 649. Majority is obtained by a person under court guardianship by age of ?

a) 19 years

b) 20 years

c) 21 years

d) 22 years

Correct Answer - C
Ans. is 'c' i.e., 21 years
A person attains majority on completion of 18 years. However if a person is under the guardianship of court, he attains majority after 21 years (Indian Majority Act 1875).

## 650. According to juvenile justice act, age of juvenile is ?

a) < 14 years

c) < 18 years

d) < 20 years

Correct Answer - C

**Ans. is 'c' i.e., < 18 years**

**<u>Juvenile Justice Act 2000</u>**

- Juvenile justice (care and protection of children Act, 2000 (now Amendment Act 2006) covers :-

i. *Juveniles in conflict → child who is alleged to have committed an offence.*

i. *Children in need of care and protection → children who are neglected, abused, or abandoned.*

- This act defines *a juvenile / child as a person who has not completed the age of 18 years.*

## 651. Which line of death certificate represent major antecedent cause of death -

a) Ia

b) Ib

c) Ic

d) II

Correct Answer - C

**Ans. is 'c' i.e., Ic**

**International death certificate**

- The basis of mortality data is death certificate.
- For ensuring national and international comparability, it is necessary to have a uniform and standardized system of recording and classifying deaths.
- For this purpose *WHO* has recommended international death certificate.
- *Consist of four lines:*

1. *Line Ia:* Disease or condition directly leading to death
2. *Line Ib:* Antecedent/ underlying cause
3. *Line Ic: Main antecedent / underlying cause*
4. *Line II:* Other significant conditions contributing to death but not related to disease/ condition causing it

***Example of a death certificate:***

1. *Line Ia:* Renal failure
2. *Line Ib:* Diabetic nephropathy
3. *Line Ic:* Diabetes mellitus
4. *Line II:* Hypertension

- Concept of underlying cause, *Line Ic is the most important line in death certificate, thus also known as `Essence of Death Certificate'.*

## 652. Exception to the rule of professional secrecy is allowed under following circumstances except ?

a) Court of law

b) Cases of suspected crime

c) In negligent suits

d) In interest of relatives

Correct Answer - D

**Ans. is 'd' i.e., In interest of relatives**

Professional secrecy is an implied ethical and legal obligation (or contract), that the doctor will not divulge any thing he comes to know concerning patient during the course of his professional work. Doctor is liable to damages for its breech.

However, it is justified in certain circumstances, to *disclose information to proper authority,* and this is known as privileged communication. It is defined as a *communication made by doctor to a proper authority* that has corresponding legal, social, and moral duties to protect the public. Privileged communication is made in certain circumstances where the doctor is justified in disclosing information about his patient. Such communication is regarded as privileged and is an exception to the general rule of professional secrecy between doctor and patient. Example are :?

1) In court of law : When asked by judge.

2) *As compulsor duty :* Every doctor has to give details of birth, death and communicable disease.

3) *As a social duty :* If health of a patient can cause danger to society, e.g. :-

*i) Railway engine driver being colour blind.*
ii) Bus driver being epileptic, drug addict or hypertensive.
iii) Pilot having refractive errors.
iv) Hotel waitor suffering from TB or being typhoid carrier.
v) Swimming pool user suffering from STD (e.g. syphilis) or infectious disease.
vi) Person suffering from STD or HIV infection likely to marry.
vii) Cases of food poisoining.
viii) Water pollution.
4) In cases of *suspected crime.*
*5)* In *self interest,* both in civil and criminal suits by patient.
6) When a servant is sent by master.
7) *In negligent suits* when doctor is employed by opposite party to cross-examine patient who filed the suit.
8) In *insurance reports,* he can report any disease found. But he should not answer queries of insurance company or solicitor without the patient consent.
9) In the *interest of patient :* If patient is not taking proper care, details can be communicated to the relatives.

## 653. Judge can ask clarifying questions when ?

a) After cross exam

b) Before cross exam

c) Before re cross exam

d) At any time he wishes

Correct Answer - D
Ans. is 'd' i.e., At any time he wishes
The judge may ask any question, in any form, about any fact, relevant or irrelevant, at any stage of the examination to clear up doubts.
**Recording of evidence**
**After oath administration, the evidence is recorded under following steps :-**

i. Examination in chief (direct examination) : It is the examination of the witness by lawyer of the party calling the witness. In government prosecutions, it is done by *public prosecutor (PP)/district government pleader(DGP).* The objective is to elicit all relevant, and convincing facts. No leading questions are permitted. Leading question means the question, which leads the witness to desired answer. However, if *the witness is declared hostile, leading questions can be asked.*
i. Cross-examination : Examination of the witness is conducted by the lawyer ofthe opposite party. In government prosecutions it is done by defence lawyer. The objective is to elicit, remove or modify facts and to test the accuracy of statement or witness. Leading questions are allowed.
i. Re-examination (Redirect examination) : It is conducted like

examination in chief and so by the lawyer of same party. The objective is to clear out any discrepancies/doubt, that have arisen during cross-examination. Leading questions are not allowed. The witness should not tell any new thing at this stage, otherwise opposing lawyer is permitted for re-cross examination.

v. Court questions : At any stage, during the recording of evidence, the judge may ask questions to clear his doubts.

## 654. Which of the gustafson's parameter is the most accurate ?

a) Attrition

b) Periodontosis

c) Root resorption

d) Transperency of the tooth

Correct Answer - D

**Ans. is 'd' i.e., Trnasperency of the tooth**

**Age from teeth after 20 years**

Teeth eruption is useful for age estimation upto about 18 years, beyond which it is just a guess work. The methods used are :?

A) Gustafson's method : Useful only in persons older than 21 years of age, depending on the physiological changes in each of the dental tissues.

1. Attrition - due to wear and tear from mastication, upper surface of teeth destroyed gradually, first involving the enamel - dentine - pulp (depending on the functional use of teeth and hardness of enamel).
2. *Paradentosis* - recession of gums and periodontal tissue surrounding the teeth, exposing the neck and adjacent part of root - teeth fall off (poor hygiene increases paradentosis).
3. *Secondary dentine formation* - develop within the pulp cavity and decrease size of the cavity, start from base - apex, obliterate the cavity, increase with age, caries and paradentosis.
4. *Cementum apposition* - near the end of root, increase cementum, increase thickness, deposited throughout life, and form incremental lines (devised by Boyde).
5. *Root resorption* - because of cementum and dentine, absorption of root start at apex and extend upward (may be pathological).

5. *Transparency of the root* - seen after 30 years of age, canal in the dentine at first widen, increase with age because of deposition of minerals. They become invisible and dentine becomes transparent (Most reliable of all the criteria).

B) Mile's method : Age can be known by changes of root transparency.

Q Boyde' method : On enamel of the tooth, there is a line at birth (neonatal line). With increase in age, more lines are added, study of which helps in age determination.

D) Stack's method : Age of infant can be known from height and weight of erupting teeth.

**655. Which of the following teeth erupt earlier in the upper jaw ?**

a) Central incisor

b) Lateral incisor

c) Canine

d) First molar

Correct Answer - B
Ans. is b' i.e., Lateral incisor

## 656. Commonly used long bone for identification ?

a) Femur

b) Radius

c) Ulna

d) Humerus

Correct Answer - A

Ans. is 'a' i.e., Femur

- Stature can be calculated from the length of long bones and used for identification.
- Femur and tibia give more accurate values compared to humerus and radius
- Stature is determined in the dismembered body (skeletal remains) by :

1. Length from the tip of the middle finger to the tip of the opposite middle finger when arms are fully extended.
2. Twice the length of one arm + 30 cm (of two clavicles) + 4 cm (for the sternum).
3. Humerus length is 1/5th of height.
4. The length from the vertex to the symphysis pubis is half of the total length.
5. The length from the sternal notch to Symphysis pubis x 3.3.
6. The length of the forearm measured from the tip of the middle finger is =5/19 of total length.
7. The height of head measured by the vertical distance from the top of the head (vertex) to the tip of chin = 1/8 of the total length.
8. The length of the vertebral column = 34/100 of total length. To the length of the entire skeleton, add 2.5 to 4 cm for the thickness of the

soft parts.

). As a general rule humerus is 20%, the tibia is 22%, the femur is 27% and the spine is 35% of the individual height.

## 657. According to federation dental lower left canine is designated as ?

a) 32

b) 33

c) 42

d) 43

Correct Answer - B
Ans. is 'b' i.e., 33

## 658. Most common finger print type is ?

a) Loops

b) Whorls

c) Composite

d) Arches

Correct Answer - A

**Ans. is 'a' i.e., Loops**

**Dactylography / DermatogIvphics / Calton system / Finger prints**

- Finger prints are present from *birth both on epidermis and dermis, remain constant through out life and can't be altered* without destroying true skin.
- *Finger print pattern is absolutely individual i.e. no two hands are entirely alike, not even identical twins.* That's why, it is *best (most sensitive and most specific) and most reliable method of identification* (Quetelet's rule of biological variation). DNA finger printing may be same in monozygotic twins.
- The pattern is neither inherited nor identical in any two persons. So the *paternity cannot be proved through finger print patterns.* However, *paternity can be proved by DNA finger printing.*
- *Loops (67% most common) > whorls (25%) > arches (7%) > composite (2% least common)* are four main types of pattern.
- It is accepted that chances of 2 finger prints *matching 16 ridge characteristic are infinitely small* (Parikh's). In practice 8 - 16 (Reddy) / 16 - 20 (Seth, Simpson) points of fine comparision are accepted as proof of identity.
- Locard's poroscopy method is study of microscopic pores, formed by mouths of ducts of subepidermal sweat gland present on ridges of

fingers. These pores are permanent, remain un changed during life and are *very useful when only fragments offingerprints are available.* Each milimeter contains 9 - 18 pores.

- Criminals may attempt to multilate finger prints by applying $CO_2$ *snow, corrosive agents, burns or eroding against hard surface.* But these manners do not destroy finger prints permanently unless true skin is completely destroyed.

## 659. Tattooing in old decomposed body can be visualized by use of all except ?

a) $H_2O_2$ 3%

b) Gamma rays

c) Infrared photography

d) Examination with magnifying glass

Correct Answer - B

**Ans. is 'b' i.e., Gamma rays**

Latent tattoo marks are faded marks and they can be visualized by

- Use of ultraviolet light
- Infrared photograpy
- Rubbing the part and examining under magnifying glass
- If tattoo marks are obscured by decomposition they can be visualized by treating with 3 % $H_2O_2$.
- Tatto marks can be developed by treating the skin by 0.5% caustic potash.
- Histopathology of local lymph nodes for pigment.

**660. Age of eruption of Permanent 1st molor ?**

a) 6 years

b) 8 years

c) 10 years

d) 12 years

Correct Answer - A
Ans. is 'a' i.e., 6 years

## 661. How many cusps are present in chewing surface of premolars ?

a) 2

b) 3

c) 4

d) 5

Correct Answer - A
Ans. is 'a' i.e., 2
**Premolars or bicuspids**

- They have two cusps on the chewing surface of teeth. The root is usually single but may be double.

## 662. Age under which child is considered incapable of committing an offence is ?

a) 3 years

b) 7 years

c) 14 years

d) 18 years

Correct Answer - B
Ans. is 'b' i.e., 7 years

## 663. In India exhumation is ordered by ?

a) Magistrate

b) Health Secretory

c) Health Minister

d) Any local MLA

Correct Answer - A
**Ans. is 'a' i.e., Magistrate**
**Exhumation**

- Exhumation is lawful digging out of a burried body from the grave for the purpose of identification or determination of cause of death.
- Only a magistrate (executive magistrate) can order for exhumation.
- In india, there is no time limit for exhumation, i.e. can be done at any time after death.
- It is done *under supervision of medical officer and Magistrate* in presence of *a police officer who provides witnesses to identify grave, coffin and dead body,* whenever possible, Magistrate should inform the relatives and allow them not to remain present at the time of enquiry.
- The *whole procedure should be conducted and completed in natural day light.*
- Therefore, it is usually started early in morning.

**664.**

## Pre auricular sulcus is a part of ?

a) Humerus

b) Femur

c) Pelvis

d) Skull

Correct Answer - C
Ans. is `c' i.e., Pelvis

- Preauricular sulcus is used for determination of sex.
- It is more frequent, broad and deep in female pelvis.
- There is attachment of anterior sacroiliac ligament.

## 665. Soft friable extradural hematoma with honeycomb appearance seen in autopsy in cases of death due to?

a) Coagulopathy

b) Thermal injury

c) Post mortem trauma

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Thermal injury
When the head is exposed to intense heat, sufficient to cause charring of the skull, heat hematomas occur.
They have the appearance like extradural hemorrhage, but signs of injury blunt force do not accompany it.
It consists of soft friable clot of light chocklate colour and may be pink, if blood contains CO.
The clot has honeycombed appearance due to bubbles of steam produced by heat.
Thickness - 11/2 to 15 mm and volume 120 ml.
Thus the findings described in the question have typical appearance secondary to excess heat as seen in thermal injuries due to burns.

## 666. Fencing attiude of the dead bodies is caused by ?

a) Ciagulation of proteins

b) Emulsification of fact

c) Exposure to excess cold

d) Electric shock

Correct Answer - A

**Ans. is 'a' i.e., Coagulation of proteins**

**Pugilistic attitude(boxing/fencing/defence attitude)**

- It is heat stiffening caused by denaturation and coagulation of proteins.
- It is indicative of exposure to intense heat.
- There is flexion at all joints and ?clawing of fingers.
- This phenomenon occurs both in antemortem and postmortem burns.

## 667. Rule of 9 in burns is used to denote ?

a) Depth of bums

b) % of total body surfacearea

c) Severity of bums

d) Type of bums

Correct Answer - B
Ans. is 'b' i.e., % of total body surface area

**668. Back of 10 - 14 years old contributes how much percentage to total body surface area ?**

a) 13%

b) 15%

c) 16%

d) 19%

Correct Answer - C
Ans. is 'c' i.e., 16%

## 669. Bone pearl appearance is seen in ?

a) Electrical burns

b) Hydrocution

c) Strangulation

d) Throttling

Correct Answer - A

**Ans. is 'a' i.e., Electrical burns**

**Electric burns**

Electric burns are at times, also referred to as joule burns. Technically, joule burn is an endogenous burn, i.e. burns produced due to release of heat from the body, on application of electric current. Electric burns may be of following types :?

1) Contact burns : Due to contact with live wire.

2) Spark burns : Due to sparking of current, e.g. in loose electrical fitting.

3) Flash burns : Caused on being near the main power line, without actual contact. Burns result due to arcing of current from these lines.

- Characteristic features of electric burns are :?

1) There may be holes in clothes or shoes.

2) There is a *wound of entry and wound of exit* of electric current :-

i. *Entry wound :* It is non-bleeding, thick, leathery, greyish white, depressed, hard and cauliflower like, known as crater formation. High voltage current may cause burns over large areas of skin, i.e. crocodile skin lesions. The skin may get coloured due to metallic pigment : *green (in brass electrode), black (in iron electrode), blue (in copper electrode) and grey (in aluminium electrode).*

i. *Exit wound :* It is like a laceration and is bleeding.

3) Metals from electrode may melt and as small balls (current pearls) may be carried to tissue. Calcium phosphate of bones may also melt

may be carried to tissue. Calcium phosphate of bones may also melt and is radiologically seen as bone pearls (wax dripping).
4) Muscles show Zenker's degeneration.

**Causes of death**

*Commonest cause of death is ventricular fibrillation.* Other causes include shock, cardiopulmonary arrest, cerebral anoxia, paralysis of respiratory muscles, and mechanical injuries due to fall.

## 670. Filigree burn occur in:

***FMGE 09; NJI 10; JIPMER 11***

a) Lightning

b) Electrocution

c) Vitriolage

d) Infanticide

Correct Answer - A
Ans. Lightning

## 671. Following is false regarding the bullet entry wound in skull ?

a) Punched in hole in outer table

b) Inner table shows bevelling surface

c) No pieces of bone are present in the bullet track

d) Wound is funnel shaped with the funnel opening in the direction in which the bullet is travelling

Correct Answer - C
Ans. is 'c' i.e., No pieces of bone are present in the bullet track
Firearm/bullet wounds in the skull
Wound of entrance shows a punched in (clean) hole in the outer table. Cone shaped bone is detached from the inner table forming a crater that is larger than the hole of the outer table and shows beveling (sloping surface).
Fissured fractures are seen radiating from the defect.
Irregular lacerations may be seen involving the leptomeninges.
Pieces of bone from the wound of entry are often driven into the cranial cavity and may establish the bullet track.
At the point of exit a punched out opening is produced in the inner table and beveled opening in the outer table.
The wound is funnel shaped with the funnel opening in the direction in which the bullet is travelling both in entrance and exit wound.
The exit wound is larger due to deformity and tumbling of the bullet after entering the skull.

**672. Bullet entry wound, for bullet entering at acute angle is identified by what shape of abrasion collar ?**

a) Circular

b) Rectangular

c) Oval

d) None of the above

Correct Answer - C
Ans. is `c' i.e., Oval
If bullet enters at acute angle to the skin then the abrasion collar is oval and if the bullet enters at right angle to the skin the abrasion collar is circular.

## 673. Black gun powder composition ?

a) Charcoal 60% + Potassium nitrate 20% + sulphur 20%

b) Charcoal 25% + Potassium nitrate 70% + sulphur 05%

c) Charcoal 15%+ Potassium nitrate 75% + sulphur 10%

d) Charcoal 65% + Potassium nitrate 20% + sulphur 15%

Correct Answer - C

**Ans. is 'c' i.e., Charcoal 15% + Potassium nitrate 75% + sulphur 10%**

The classical gun powder is known as black powder, consists of charcol (15%), Sulphur (10%), and potassium nitrate (75%). Depending on fineness, the black gun powder is designated as FG, FFG, FFFG. etc. (F = fineness). Pyrodex is another gun powder with same components, but with different ratios.

Black gun powder produces smoke, i.e. It *is* smoke producing powder. Smokeless powder, in addition to black powder, has nitrocellulose (single base), or *nitrocellulose plus nitroglycerine* (double base), or nitrocellulose plus nitroglycerine plus nitroguanidine (triple base). Semi smokeless powder has 80% black powder and 20% smokeless powder (nitrocellulose).

## 674. Presence of spiral grooves in the barrel of weapon is referred to as ?

a) Rifling

b) Incendiary

c) Cocking

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Rifling**

**Type of firearm weapons**

- Bore (caliber) is the inner diameter of barrel. Based on inside of barrel (i.e., bore), the firearm weapons are divided into:?

1. Smooth bore weapons : Barrel or bore is smooth inside, e.g., shot gun, muskets, and muzzle loaders.
2. Rifled weapons : Barrel or bore is rifled from inside, i.e., has longitudinally twised grooves. Example are : Pistals, rifles and revolvers.

- Pistals and revolvers are small, so referred to as hand guns.

## 675. Maximum soft tissue bruising in neck is seen in -

a) Strangulation

b) Hanging

c) Burking

d) Smothering

Correct Answer - A
Ans. is 'a' i.e., Strangulation
As manual strangulation (throttling) is among the most violent form of asphyxia, hyoid fracture and other injury to neck structures is more common.

## 676. Hyoid bone fracture most common occurs in ?

a) Manual strangulation

b) Hanging

c) Smothering

d) Traumatic asphyxia

Correct Answer - A
Ans. is 'a' i.e., Manual strangulation
As manual strangulation (throttling) is among the most violent form of asphyxia, hyoid fracture and other injury to neck structures is more common.

## 677. What is the situation of the knot of ligature in cases of typical hanging?

a) In front of chin

b) Angle of mandible

c) Occiput

d) Mastoid

Correct Answer - C
Ans. is 'c' i.e., Occiput
Typical hanging : The ligature runs from the midline *above the thyroid cartilage,* symmetrically upward on both side of neck to the occipital region, the point of suspension (knot of ligature) being on occiput (at nape of neck).
Atypical hanging : Any variation from typical knot site (i.e. other than occiput/nape of neck) is called atypical hanging. Most common site of knot is near one side of *mastoid process or angle of mandible.*

## 678. Torture in which legs or thighs are tied with bamboo and the torturer presses on the two sides of the clamp to cause pain is called ?

a) Falanga

b) Telefono

c) Mercelago

d) Chepuwa

Correct Answer - D

**Ans. is 'd' i.e., Chepuwa**

**Physical torture**

- Torture is defined as deliberate, systemic or wanton infliction of physical or mental suffering by one or more persons acting alone or on the orders of any authority, to force a person to yield information, to make a confession or for any other reason.
- Torture may be physical or psychological. Important methods of physical torture are :?

**1. Beating : Beating may be of following types ?**

i. *Falanga (Falolka/Baatinada) :* Beating of soles of feet with blunt object.

i. *Telefono :* Simultaneous beating of both ears with palms.

i. *Quirofana :* Beating on abdomen while upper half of body lying unsupported on table.

**2. Electric : Electric torture may be -**

i. *Piacana :* Placing electric wires in vagina, mouth, anus or over nipples and testis.

i. *Black slave :* Heated metal skewer inserted into anus.

**3. Near suffocation : These are -**

i. *Dry submarine :* Plastic bag covering head and face.

i. *Wet submarine (Labaneva/Latina/Pileta):* Forced immersion of victim's head in water, often contaminated with urine or vomit or blood.

**4. Suspension : Suspension may be -**

i. *La-Bandera :* By wrist.

i. *Mercelago :* By ankles.

**5. Forced posture : It may be *?***

i. *Planton :* Prolonged standing.

i. *Cabellete (Saw horse) :* Forced struddling of a bar.

i. *Parrot's perch (Jack/paude Grava) :* Head down by a horizontal pole placed under knees, with the wrists bound to the ankles.

*. *Chepuwa :* Tight clamping of thighs or legs with bamboo, and the torturer may press two sides of clamps with his legs or may stand on two sides of clamps (practiced on Bhutanese refugees in Nepal).

## 679. Most common organ affected in underwater blast ?

a) Intestine

b) Liver

c) Spleen

d) Heart

Correct Answer - A
Ans. is 'a' i.e., Intestine
The most common organ affected in underwater blast injury is intestine.
**Explosion injury**

- An explosion is a phenomenon resulting from sudden release of energy which is then dissipated by a blast wave, by translocation of objects, or by the generation of heat. Injuries in explosion occur due to four factors :?
1) Blast or shock wave

- When an explosion occurs, the explosive material produces a large volume of gas and releases a large amount of energy. It produces a *'shock wave'* which spread concentrically from the site of explosion. The injuries depend on the enviornment in which blast occurs :-

i. *Air blast (most common) :* Explosion occurs in air. There is barotrauma to *air filled hollow organs.* Tympanic membrane (ear drum) is most sensitive and most commonly injured. Lung is the second organ to be injured and *is the most commonly injured hollow organ and most common cause of life threatening injury.* Other parts injured are middle ear, cochlea, eyes, bowels, mesentery, omentum and brain. *Homogenous solid organs like liver and muscles are usually not affected.*

i. *Under water blast (explosion under water): Gastrointestinal tract is injured most commonly. Lungs* are also injured.

i. *Solid blast :* Explosive is detonated near a rigid/solid structure and wave of energy spreads through it. If people are in contact with that rigid structure, injuries take place. *The injuries are mostly skeletal;* fracture of legs and vertebral column are more common. *GIT damage* is more common than *lung.*

2) *Flame* or hot gases

- Burns or burning of body may occur.

3) Flying missiles (debris)

- Flying pieces of *explosive debris* may be driven through air against the skin causing bruises, abrasions, lacerations, and ragged perforations.

4) Anoxia

- Various gases liberated during explosion may cause anoxia, e.g. carbon monoxide, nitrous oxide, nitric oxide, HCN and SO,.

## 680. Bullet which is left inside the body for long is referred to as ?

a) Souvenir bullet

b) Tracer bullet

c) Tumbling bullet

d) Tandem bullet

Correct Answer - A

Ans. is 'a' i.e., Souvenir bullet

Projectile is an object propelled by force of rapidly burning gases. In shotgun these are *lead shots and pellets* (recently steel is also used instead of lead) and in rifled weapons (pistal, rifle, revolver), these are bullets.

**Tip of the bullet is knwon as nose. Varieties of bullets are :-**

i. *Incendiary (igniting) bullet :* The tip of bullet contains self igniting material e.g. *barium nitrate and powdered aluminium and magnesium* (in the past, phosphorus was used), so that it catches fire on hitting the target. It is used to cause fire in usually inflammable targets like fuel tanks (of air crafts etc).

i. *Explosive bullet :* The tip contains a detonator or lead azide, so that the bullet explodes on hitting the target.

i. *Dum-dum bullet (expanding bullet):* It is a jacketed bullet with is *nose tip chiseled or cut off.* It is designed to *increase in diameter and expand upon striking* the target, thus producing larger diameter wounds of limited penetration.

. *Tandem bullet (Piggey tail bullet) :* It is called *one-behind-other bullet* because two bullets are ejected one after the other, when first bullet failed to leave the burrel and is ejected by subsequently fired bullet. Therefore, both enter body through same enterance wound (some

times, they may enter through different entries), but the wounds of exit are always two.

v. Tandem (Duplex) cartridge is one in which *two bullets are present in same cartridge.* It is used in military rifles.

i. *Tracer bullet:* It leaves a trace in atmosphere along the path so that a person (gunner) can observe the strike. Burning of *barium nitrate* produces flame and *powdered magnesium along with strontium nitrate* are added to give red color to the flame.

i. *Tumbling bullet :* One that *rotates in end on end* during its motion.

i. *Yawning bullet :* One which *travels in an irregular fashion* and causes a *key hole entery wound. Yaw* means deviation between long axis of bullet and the axis of path of bullet.

c. Souvenir *bullet :* A bullet *left in body for long time* and is *surrounded by fibrous tissue.*

c. *Frangile bullet :* Designed to fragment upon impact.

i. *Mushrooming of bullet :* A soft nose bullet, an hitting the target may get deformed to assume the shape of a mushroom.

## 681. Feature which differentiates true from artificial bruise is ?

a) Round shape with irregular margins

b) Irregular shape with regular margins

c) Swelling of surrounding area

d) Erythema of surrounding area

Correct Answer - A

Ans. is 'a' i.e., Round shape with irregular margins

- Such "injury" is an **artificial**/false **bruise** that may be produced by applying the juices of various irritant vegetable poisons.
- Other agents that can produce artificial bruise may include madar juice or Plumbago root. The juice, like vitriol, has been thrown on the face with evil intention. Homicidal poisoning by internal administration of the juice is very rare.

| *Features* | *True bruise* | *Artificial bruise* |
|---|---|---|
| 1. Cause | Blunt trauma | Usually chemical |
| 2. Site | Any part of the body | Approachable area |
| 3. Colour | Colour changes with time | Usually fresh, dark brown |
| 4. Shape | May be according to the causative weapon | Irregular |
| 5. Margins | Not regular | Vesicles may be seen, margins regular |
| 6. Local inflammation | May not be seen | Local changes seen |
| 7. Itching | No | Usually present |
| 8. Migration | May migrate to other areas e.g. black eye | No migration seen |
| 9. Contents | Blood | Acid serum |
| 10. Chemical Test | Negative | Chemical may be demonstrated |

## 682. Incised wound which is not a feature ?

a) Length is the greatest dimention

b) Width is more than the thickness of the blade

c) Margins are inverted

d) Hesitation cuts are seen in suicidal attempt

Correct Answer - C
Ans. is 'c' i.e., Margins are inverted
Margins are everted, clear, and clean cut.

## 683. Incised looking laceration is seen at ?

a) Forehead

b) Hand

c) Thorax

d) Abdomen

Correct Answer - A

**Ans. is 'a' i.e., Forehead**

**LACERATIONS (Tear or Rupture)**

Lacerations are tears or splits of skin, mucous membrane and underlying tissue (e.g., muscle or internal organs). Lacerations are produced by application of blunt force to broad area of the body, *which crush or stretch tissues* beyond the limits of their elasticity. Localized portions of tissue are displaced by the impact of the blunt force, which sets up traction forces and causes tearing of tissues.

**Features of lacerations are :?**

i) Hair and hair bulb, nerves and blood vessels are crushed → There may be paralysis (nerve crushed) and *hemorrhage is not pronounced (blood vessels crushed).*

ii) Site of injury is the site of impact.

iii) Shape of injury is irregular, margins are irregular and contused/abraded and show tags of tissue.

iv) Size of injury does not corresponds to impacting surface.

**There are following types of laceration : ?**

**1) Split laceration :** Splitting occurs by crushing of skin between two hard objects. Blunt force on areas where the skin is close to rigid structures like bone with scanty subcutaneous tissue, may produce a wound that by linear splitting of tissue may look like incised wound, i.e., incised like or incised looking wound. Examples of such area

are scalp, eye brows, cheek bones (zygomatic), lower jaw, iliac crest, perineum and skin. A wound produced by a fall on *knee or elbow* with limb flexed and by a sharp stone also simulates incised wound.

**2) Strech lacerations :** Overstretching of the skin, if it is fixed, will cause laceration, for example, by kicking, sudden deformity of bone occurs after fracture, making it compound.

**3) Avulsion (shearing laceration) :** An avulsion is a laceration produced by sufficient force (shearing force) delivered at an acute angle to detach (tear off) a portion of a traumatized surface or viscus from its attachment, the shearing and grinding force by a weight. Flaying *is* type of avulsion in which shearing and grinding force by weight (such as of lorry wheel passing over a limb) may produce avulsion (separation of skin from underlying tissue/degloving of a large area).

**4) ears :** Tears of the skin and tissues can occur from imact by a against irregular or semi-sharp objects, such as door handle of a car. This is another form of overstretching.

**5) Cut laceration :** Cut lacerations may be produced by a heavy sharp edged instrument.

## 684. Counter coup injury seen in when ?

a) Moving head is suddenly decelerated

b) Stationery head is suddenly accelerated

c) Fall of heavy object on head

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Moving head is suddenly decelerated
Countrecoup injury is caused when moving head is suddenly decelerated by hitting a firm surface.
It can either be a subdural or subarachnoid hemorrhage.
**Brain injuries**

- Coup injury is defined as the injury of skull and/or brain *at the site of impact,* e.g. a blow on forehead, resulting in fracture of frontal bone and injury or haemorrhage in frontal lobe.
- Contre coup injury is defined as an *injury* to the skull or brain, on opposite (contralateral) side of the area of impact.
- Cerebral concussion (stunning) occurs due to head trauma and is characterized by gross *physiological disturbance of brain without any anatomical damage.* There is sudden loss of consciousness with a tendency to spontaneous recovery. The condition is more severe when damage is caused to the moving head (decceleration injury) than when it results from blows to skull. Recovery from concussion is often followed by retrograde amnesia.

## 685. Puppe's rule deals with?

a) Chemical injuries

b) Multiple impact injuries

c) Sexual assault

d) Percentage of burns

Correct Answer - B
Ans. is `b' i.e., Multiple impact injuries

## 686. Lucid interval may be seen in ?

a) Intracerebral hemorrhage

b) Alcohol intake

c) Insanity

d) Subdural hemorrhage

Correct Answer - C
Ans. is `e' i.e., Insanity
Lucid interval *is seen in insanity and epidural haemorrhage.*
Lucid interval is *a state of consciousness* between two episodes of unconsciousness in *subacute/chronic epidural haemorrhage.* It is significant that during this period (lucid interval), the person can :
(i) Make *a valid will,* (ii) *Can give valid evidence,* and (iii) *Is legally responsible for act done (civil/criminal).*
Lucid interval is also seen in insanity, i.e. the period of sanity between two phases of insanity.

## 687. Frigidity is ?

a) Inability to initiate sexual arousal in males

b) Inability to initiate sexual arousal in females

c) Inability to initiate and maintain sexual arousal in males

d) Inability to initiate and maintain sexual arousal in females.

Correct Answer - D
Ans. is 'd' i.e., Inability to initiate and maintain sexual arousal in females
Frigidity : Inability to initiate and maintain sexual arousal in females.

## 688. "Last" to putrefy in male is:

a) Uterus

b) Prostate

c) Testes

d) Liver

Correct Answer - B
Prostate

## 689. Anal coitus with opposite sex is -

a) Bestiality

b) Sodomy

c) Sin of Gomorrah

d) Fellatio

Correct Answer - B
Ans. is 'b' i.e., Sodomy
Anal intercourse between two males or between a male and female is called sodomy. It is called sodomy as it used to be practiced in a town called sodomy.

## 690. Impotence is not a feature of -

a) Double penis

b) Bilateral castration

c) Hypospadias

d) Penile amputation

Correct Answer - C
Ans. is 'c' i.e., Hypospadias
*"Congenital problems such as hypospadias are not usually associated with erectile dysfunction" — Michael C Foster*

## 691. Which of the following is not a sexual offence in India -

a) Incest

b) Sodomy

c) Indecent assault

d) Bestiality

Correct Answer - A
**Ans. is 'a' i.e., Incest**
**Incest**

- It means sexual intercourse by a man with a woman who is closely related to him by blood (prohibited degrees of relationship), e.g. a daughter, grand daughter, sister, step sister, aunt, or mother.
- These cases usually have psychological features.
- In India, incest as such is not an offence.

## 692. Taking off ones clothes and running naked in a public race is called ?

a) Mooning

b) Exhibitionism

c) Voyeurism

d) Undinism

Correct Answer - B
Ans. is 'b' i.e., Exhibitionism
Exhibitionism (Sec 294 IPC): It is a willful and intentional exposure of the genitalia in a public place while in the presence of others to obtain sexual pleasure. May or may not be associated with masturbation (punishment = 3 months + fine).
Voyeurism = Scoptophilia = Peeping tom: Sexual gratification is obtained by looking at the sexual organs of other persons, watching the act of sexual intercourse, or witnessing undressing by a woman.
Frotteurism: Sexual satisfaction is obtained by rubbing against persons in a crowd. If they attempt intercourse, they have premature ejaculation or they are impotent. It is an uncommon perversion and rarely occurs alone.
Undinism: In this, sexual pleasure is often obtained by witnessing the act of urination by someone of the same or opposite sex.

## 693. Evidence not used in rape?

a) Semen in vagina

b) Semen on clothes

c) Presence of smega bacilli in vagina

d) Presence of smegma under prepuce

Correct Answer - D

**Ans. is 'd' i.e., Presence of smegma under prepuce**

**Examination in a case of rape**

A. Examination of victim

- Victim cannot be examined without written informed consent. Informed written consent should be obtained if the *age of victim is above 12 years.* If she is less than 12 years of age or if she is mentally unsound, the written consent of parent/guardian should be taken (Sec. 90 IPC). Victim (female) should be examined by or under supervision of a female RMP (Sec. 53(2) CrPC).
- **Finding which are suggestive of rape are :-**

1. *Signs of struggle on clothes (tear, blood, semen, mud etc), body and genitals (abrasion, contusion, bites or nail marks etc).*
2. Presence of the semen in the vagina (proof of sexual intercourse).
3. Presence of spermatozoa in the vagina.
4. Locards principal of exchange states that whenever two bodies come in contact with each other, there is exchange of material between the two and so a criminal can be linked to crime. In case of rape, piece of cloth, button, hair, blood, saliva, semen or smegma from the accused may be found on the body of victim and conversly materials of victim may be found on the body of accused.
5. Presence of smegma bacilli in vagina is suggestive of coitus.

**B.Examination of accused**

1. An accused can be examined even without his consent (Sec 53(A) CrPC). Findings may be Presence of *torn frenulum* is consistent with a recent intercourse.
2. The presence of smegma under prepuce is inconsistent with recent intercoures as it gets rubbed off during sexual intercourse and may be deposited in vagina. It takes about 24 hours to accumulate. Thus, absence of smegma may indicate sexual intercourse, provided no bath is taken.
3. Presence of vaginal epithelial cells on penis can be detected by lugol's iodine.

## 694. Immersion syndrome occurs due to ?

a) Vagal inhibition

b) Vagal Stimulation

c) Sympathetic stimulation

d) Sympathetic inhibition

Correct Answer - A

**Ans. is 'a' i.e., Vagal inhibition**

**Types of drowning**

Drowning is classified as (1) typical and (2) atypical.

**1. Typical drowning (wet drowning)**

- *Typical drowning* refers to obstruction of air passages and lungs by inhalation of water or other fluid. Therefore it is also called *wet drowning* and findings *offluid and froth* are present in PM examination. Typical drowning may be :-

i. Fresh water drowning : In fresh water drowning large quantities of water cross the alveolar membrane into circulation causing hypervolaemia and hemodilution. RBCs imbibe water and burst (hemolysis) with liberation of potossium. Therefore, heart is exposed to volume overload, potassium *excess, sodium deficit (hyponatremia),* and *anoxia.* Anoxia and hyperkalemia cause ventricular fibrillation and death in 4-5 minutes.

i. Salt water drowning : Hypertonicity of inhaled water causes loss of fluid from circulation into the lungs giving rise *fulminating pulmonary edema* with progressive *hypovolaemia, circulatary shock,* and eventually cardiac standstill (asystole) with death in 8-12 minutes.

**2. Atypical drowning**

- It refers to drowning in which even after submersion of body in water, little or no water anters respiratory passages and lungs.

Hence *typical findings of wet drowning in the form of froth and oedema aquosum of lungs are not found.* Atypical drowning may be :-

i. Dry drowning : On contact with water, especially cold water, there results intense laryngospasm, so that water does not enter the lungs. Death is due to asphyxia because of laryngospasm.
i. Immersion syndrome (hydrocution/submersion inhibition/vagal inhibition) : Sudden death occurs due to vagal inhibition as a result of (a) *sudden impact with cold water, (b) duck diving (falling in water with feet first), and (c) horizontal entry in water with impact on epigastrium.*
i. Submersion of unconscious : If person is unconscious since before submersion in water, little or no water enters respiratory passages. It may occur in MI, cerebrovascular accident, hypertension, epilepsy, cerebral aneurysm and in drunk state.
v. Near drowning (secondary drowning syndrome/post immersion syndrome) : In this drowning is survived and death occurs at a later stage after removal from water. Either the person himself comes out of water or he is recovered alive, but due to complications of submersion, he dies at a later stage. It is due to *hypoxic encephalopathy* and *fibrosing alveolitis.* The death occurs due to combined effect of cerebral hypoxia, pulmonary edema, aspiration pneumonitis, electrolyte disturbances and metabolic acidosis.

**695. What of the following is seen in fresh water drowning ?**

a) Hypovolemia

b) Hemoconcentration

c) Hyperkalemia

d) Hypernatremia

Correct Answer - C
Ans. is 'c' i.e. Hyperkalemia

## 696. Legal age by which fetus is capable of independent existence is ?

a) 240 days

b) 230 days

c) 220 days

d) 210 days

Correct Answer - D

**Ans. is 'd' i.e., 210 days**

Viability means the physical ability of a foetus to lead a separate existence after birth apart from its mother, by virtue of a certain degree of development. A child is viable after 210 days (7 months) of intrauterine life, and in some cases after 180 days (6 months) but in most of these cases fetus is immature.

**Full term mature infant show :-**

- Length (crown-heel length) 48-52 cm, head circumference 30-35 cm.
- Ossification center at lower end of femur (appears at the end of 9 months or just before birth) and *Ossification center of cuboid and upper tibia may also present* (Note : some ossification centers are also present, but they appear before the attainment of viability so their presence does not have importance. These are (i) Clavicle, mandible, ribs vertebra → at the end of $2^{nd}$ month, (ii) Calcaneum(os calcis) and manubrium sterni → at the end of $5^{th}$ month and (iii) Sternum → at the end of 6 month). *Other center which appears at attainment of viability is primary ossificaion center of talus which appears at the end of $7^{th}$ month.*

## 697. Rule of Haase is used to calculate ?

a) Age of fetus

b) Length of femur

c) Diameter of skull

d) Percentage of burns

Correct Answer - A
**Ans. is 'a' i.e., Age of fetus**
**Rule of Haase**

- Hess's rule (Haase's rule) : It is a rough method for calculating the age of fetus by measuring the length from crown to heel.
- Upto 5th month of gestation, length of foetus in cm is square of the month of gestation and beyound *5* months, length in cm is 5 times the month of gestation.

## 698. What is the proof of eyes being open for few hours after death ?

a) Kevokian sign

b) Tache noir

c) Both of the above

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Tache noir
If the eye lids are open for a few hours after death, a film of cell debris and mucous forms two yellow triangles on the sclera on either side of the iris , which become brown and then black called tache noir withing 3 - 4 hours.

## 699. Which method is not used for autopsy ?

a) Virchow

b) Rokitansky

c) Lettulle

d) Thomas

Correct Answer - D
**Ans. is 'd' i.e., Thomas**
**Methods of removal of organs**

- *Virchow's technique* - organs are removed one by one. Cranial cavity is exposed first, followed by thoracic, cervical & abdominal organs.
- *Rokitansky's technique* - It involves in situ dissection in part, combined with en block removal.
- *Lettulle's technique* - Cervical, thoracic, abdominal & pelvic organs are removed en masse & dissected as organ block.

## 700. Spalding sign is seen in ?

a) Drowning

b) Mummification

c) Maceration

d) Starvation

Correct Answer - C
Ans. is 'c' i.e., Maceration
Dead born : A deadborn child is one which has died in utero and shows one of the following signs after it is completely born *:?*
*1) Rigor mortis :* Rigor mortis may occur in dead fetus before birth or at birth.
*2) Maceration :* Maceration is a process of aseptic autolysis. It occurs when a dead fetus remains in the uterus for 3-4 days surrounded by liquor amnii but with exclusion of air. *Skin slippage is the earliest sign* (occurs within 12 hours). There is gas in the great vessels and chambers of heart (Robert's sign). *Except for lung and uterus,* which remain unchanged for a long time, all other organs become soft, oedematous and loose there morphology. The one important radiological sign suggestive of maceration is 'Spaulding's sign' i.e. skull bones override each other. The smell is somewhat rancid.
*3) Putrefaction (decomposition) :* If the membranes are ruptured after death of fetus and air gains entry into liquor amnii, fetus undergoes putrefaction instead of maceration. Body *is* greenish, foul smelling and bloated.
*4) Mummification :* It results when there is deficient blood supply, scanty liquor and no air enters uterus. Body is thin, shrivelled dark brown and emitting smell like rotten cheese.

## 701. Rigor mortis in fetus at birth can be seen in ?

a) Dead born

b) Still born

c) Superfoetation

d) Superfecundation

Correct Answer - A
Ans. is 'a' i.e., Dead born
Signs of dead born (intrauterine death : **IUD)** are (i) *Rigor mortis at birth,* (ii) Maceration, (iii)Putrefaction, and (iv) *Mummification.*

## 702. Following is not true about adipocere formation ?

a) It is a modification of putrefaction

b) It is developed in presence of air

c) It occurs in dead bodies lying in water

d) Body has an offensive sweet smell

Correct Answer - B

**Ans. is 'b' i.e., It is developed in presence of air**

**Adipocere formation (saponification).**

Adipocere is a *modification of putrefaction,* which occurs in *the absence of air.* That is when there is *excessive moisture (humidity) and warnth (warm temperature), but absence of air i.e. warm humid climate,* normal putrefaction does not occur, rather saponification occurs.

Thus adipocese formation occurs in dead bodies which are *lying in water (immered in water)* or *burned in damp lay soil.*

- Saponification (adipocer formation) is the conversion of dead body into soft, fatty waxy substance due to conversion of unsaturated liquid fats to saturated solid fats under the influence of intrinsic lipase and lecithinase produced by Cl. perfringens. The process involves gradual hydrolysis and hydrogenation of body fats into higher fatty acids which combine with calcium and ammonium ions to form insoluble soaps. Ultimately, palmitic, oleic, stearic and hydroxystearic acids are formed, mixture of these is known as adipocere.
- Adipocere formation starts in subcutaneous fat and is marked in areas having excessive fat, eg. *cheeks, female breast, buttocks and abdomen.* Slowly the whole body including muscles and internal

viscera change into adipocere. Adipocere has offensive or sweetish smell, however in early stages, smell is *ammonical.*

- Body is converted into soft, waxy and brittle substance, it floats on water, it can be cut easily, it dissolves in alcohol and ethers, and it melts on heating. *Facial features and injuries on body are well preserved,* thus identfication of body and determination cause of death (in case of injury) are possible.
- Normally adipocere formation *requires 3 weeks to upto 3 to 6 months.* However shortest recorded period in india is 3 days 22 hours. *In india, it has been observed to begin within 4-5 days.* Adipocere may persist for years or decades. *Adipocere does not occur in foetus less than 7 month's.*
- Medicolegal importance : (i) Identification of body (facial features are preserved), (ii) cause of death (injury marks are preserved), (iii) time since death can be estimated.

## 703. Mummification is enhanced by ?

a) Moist and hot air

b) Moist and cool air

c) Dry and hot air

d) Dry and cool air

Correct Answer - C

**Ans. is 'c' i.e., Dry and hot air**

**Mummification**

It is a *modification of putrefaction,* which occurs in the *absence of moisture.* That is when there is *excess air and warmth but no moisture (humidity),* i.e. hot dry and windy climate, mummification takes place in place of normal putrefaction. Thus mummification occurs in *deserts,* especially in summer and also in bodies buried in *shallow grave in sandy soil.*

Mummification is characterized by dessication or drying of the dead body. There is *drying, dehydration and shriveling of dead body.* It proceeds from exterior to interior. Therefore first *to be involved is skin,* especially of exposed body parts like *lips, nose tip, hands (fingers) and feet (toes).* The skin is shrunken, contracted, dry, brittle, leathery, streched across bony prominences and rusty brown to black in color. Internal viscera also dry up, darken in color and blend with each other to form a single mass. Body emits smell like rotten cheese. Facial features and injuries are well preserved, thus identification of body and cause of death can be determined (like adipocere formation).

Time required for mummification varies between 3 months - 2 years. If properly preserved, a mummified body can remain for years. Chronic arsenic or antimony poisoning favor mummification.

Medicolegal importance : **(i)** Identification of body (facial features are preserved), (ii) cause of death (injury marks are preserved), (iii) time since death can be estimated.

## 704. Suspended animation is seen in following except?

a) Sun stroke

b) Cerebral concussion

c) Cholera

d) Delerium tremens

Correct Answer - D
Ans. is 'd' i.e., Delirium tremens
Suspended animation may be seen in electrocution, drowning, cholera, after anesthesia, shock, sunstroke, cerebral concussion, narcotic poisoning, new born infants and yogis/voluntary.

## 705. When group of muscles of dead body were in state of strong contration immediately prior to death and remain so even after death, this is termed as ?

a) Gas stiffening

b) Rigor mortis

c) Cadaveric spasm

d) Cold stiffening

Correct Answer - C
Ans. is 'c' i.e., Cadaveric spasm

- Cadaveric spasm (instantaneous rigor) is defined as the condition wherein a group of muscles, which were in contraction or spasm at the time of death, continue to be in spasm even after death, without the stage of primary relaxation.
- It is a condition in which the muscles of the body which were in a state of contraction immediately before death, continue to be so after death without passing through the stage of primary relaxation.
- Cadaveric spasm, being an antemortem phenomenon, reflects the last act of the subject performed before and at the time of his death. The cause and manner of death may be judged.
- It may be due to exhausted ATP in the affected muscles with the persistence of contraction even after death and the resulting failure of the chemical processes required for active muscular relaxation to occur during molecular death. Adrenocortical exhaustion, which impairs resynthesis of ATP may be the possible cause

## 706. Atria mortis other name for?

a) Gateways of death

b) Gateways of life

c) Gateways of air

d) Gateways of water

Correct Answer - A
Ans. is 'a' i.e., Gateways of death

## 707. Postmortem blood is collected from which vessel ?

a) Femoral artery

b) Femoral vein

c) Cephalic vein

d) Brachial artery

Correct Answer - B
Ans. is 'b' i.e., Femoral vein
Before autopsy 10 - 20 ml of blood is collected from the femoral vein in groin. Jugular/ subclavian vein can also be used.

## 708. Barberio's test uses which of the following?

a) Picric acid

b) Acetic acid

c) Hydrochloric acid

d) Sulfuric acid

Correct Answer - A
Ans. is 'a' i.e., Picric acid

## 709. Which of following tests in used to detect semen?

a) Phenolphthalein test

b) Reine's test

c) Barberio's test

d) Paraffin test

Correct Answer - C

C i.e. Barberio's test :

- Barberio's test is used for identification of seminal stains

Few drops of barberio's reagent (containing pieric acid) are added to the seminal stain.

Positive test is indicated by formation of Yellow and needle shaped crystals of spermine picrate.

(Spermine in seminal stain reacts with picric acid to form these crystals)

- Phenolphthalein test (Kastle-Meyer test) is used for identification of haemoglobin in blood stains - *Parikh 6th/7.16*
- Paraffin test (or Dermal nitrate test) is used to detect gun powder on skin i.e. to determine if suspect had discharged a firearm- *Parikh 6"/7.39*
- Reine's test has not been mentioned in forensic literature

**Forensic tests to detect**

| Seminal Stain | Blood Stains |
|---|---|
| - Barberio's testO | - Benzidine testQ |
| - Fluorence testO | - Phenophthalein (Kastle? |

| | |
|---|---|
| - Acid phosphatase testQ<br>- Creatine phosphatase test<br>- Elisa test | Meyer) testQ<br>- Takayama's Haemochromogen crystal testQ<br>- Teichmann's Haemin crystal testQ<br>- Spectroscopic test |

## 710. Sodium flouride may be use for preservation of

a) Cyanide

b) Arsenic

c) Alcohol

d) Urine

Correct Answer - C

**Ans. is 'c' i.e., Alcohol [Ref Parikh 6$^{th}$/e p. 2.62; Essentials of forensic medicine & toxicology 23$^{rd}$/e p. 101]**

Sodium fluride should be added to urine or vitreous humor, if alcohol estimation is required; and also to samples for analysis for cocaine, cyanides and CO.

## 711. Alkaline diuresis is treatment of choice in poisoning with ?

a) Benzodiazepine

b) Barbiturates

c) Dhatura

d) Morphine

Correct Answer - B
Ans. is 'b' i.e., Barbiturate poisoning
Elimination of poison from circulation can be by following methods :?
A) Forced diuresis with or without alteration of urinary pH

- Diuresis and ion trapping via alteration of urinary pH may prevent the renal reabsorption of poisons that under go excretion by glomerular filteration and active tubular secretion. Forced diuresis may be of following types *:?*

*1) Alkaline diuresis :* Poisons which are trapped and excreted in alkaline urine are barbiturates (phenobarbitone), chlorpropamide, diffunisol, sulfonamides and salicylates.
*2) Acid diuresis :* It is done for amphetamines, cocaine, strychnine, phencyclidine, quinidine, quinine, chloroquine, TCA and tocainide.
*3) Saline diuresis :* It is useful for alcohol, thallium, bromide, lithium, fluoride, chromium, potassium and isoniazide.
B) Extracorporal removal therapies

- These are peritoneal *dialysis, hemodialysis, hemoperfusion (resin or charcol), hemofiltration, plasmapheresis and exchange transfusion.*

Commonly used procedures are :?
1) Haemodialysis : It is useful in poisoning with alcohol (ethanol and methanol), aspirin (salicylates), acetone, atenolol, acetaminophen, barbiturates (phenobarbitone), bromide, boric acid, chloral hydrate,

ethylene glycol, fluoride, lithium, trivalent arsenic, procainamide, theophylline, thiocyanate, sodium chlorate and sotalol. Hemodialysis is not useful in copper sulphate, benzodiazepines, organophosphates, kerosine and digitalis poisonings.

- In all poisonings, where hemodialysis is indicated *peritoneal dialysis* is also used with one more indication of mercury poisoning.

2) Hemoperfusion (chorcol or resin) : It is used in acetaminophen, barbiturates carbamazepine, chloral hydrate, caffeine, $CC1_4$, chloramphenical, phenytoin, procainamide, salicylates, theophylline, valproate, dapsone and methotrexate.

## 712. Amyl Nitrate is used as an antidote in...poisoning :

a) $CO_2$

b) CO

c) Cyanide

d) Nitric acid

Correct Answer - C
C i.e. Cyanide

## 713. Phossy jaw is caused by ?

a) White phosphorus

b) Red Phosphorus

c) Arsenic

d) Antimony

Correct Answer - A

**Ans. is 'a' i.e., White Phosphorus**

Phossy jaw is caused by phosphorus poisoning. All phosphorus poisoning are caused by white (yellow) phosphorus (Red phosphorus is nontoxic).

**Phosphorus poisoning**

- Phosphorus is a protoplasmic poison affecting cellular oxidation and causing anoxic necorbiosis, classically affecting liver. It increases fat deposition and inhibits glycogen deposition in liver. It is used in fire works *(Diwali poisoning)* and as rat poison. Lethal dose is 60-120 mg.

**Phosphorus occurs in two forms :?**

1) White/yellow phosphorus : It is white, and becomes yellow on exposure to air. It is translucent, waxy, luminous and crystalline cylinders. It has garlic like odor. It is insoluble in water and luminous in dark. Its fumes show phosphorescence.

2) Red phosphorus : It is reddish brown, inert, odourless and tasteless. It is nontoxic (thus poisoning occurs only due to white phosphorus). It is put on the sides (striking surface) of match box (along with powdered galss).

Acute poisoning

**It has following stages :**

i) 1st Stage (GI irritation) : There is nausea, vomiting, diarrhea and garlic odor. This stage lasts for 8 hours to 2 days

garlic odor. This stage lasts for 8 hours to 3 days.
ii) 2nd Stage (Asymptomatic) : This stage lasts for 3 days.
iii) 3rd Stage : There is *liver and kidney damage* due to absorbed phosphorus. Initially liver is enlarged due to acute fatty infiltration. Later liver shruks due to necrosis, i.e. *acute yellow atrophy.*

**Chronic poisoning**

- Toothache is the first symptom which is associated with loosening of teeth, necrosis of gums and osteomyelitis of jaw. Therefore chronic phosphorus poisoning is also know as phossy jaw (or glass jaw).

**Postmortem appearance**

- There is garlic odor. Viscera and stool glow in dark (due to luminosity).
- To preserve luminosity, viscera are preserved in *saturated saline solution.* Rectified spirit is not used as it causes loss of luminosity.

## 714. Which type of neuropathy is seen in arsenic poisoning ?

a) Symmetric peripheral motor neuropathy

b) Asymmetrical peripheral motor neuropathy

c) Symmetrical peripheral sensory neuropathy

d) Asymmetrical peripheral sensory neuropathy

Correct Answer - D
Ans. is 'd' i.e., Asymmetrical peripheral sensory neuropathy
Neurological manifestations of arsenic poisoning
Headache, vertigo, hyperthermia, tremors, convulsions, coma, general paralysis.
Peripheral neuropathy that is more sensory than motor occurs in asymmetric distal stocking glove distribution after one to two weeks of acute or chronic exposure.

## 715. What is the upper permissible limit of alcohol allowed while driving in India -

a) 20 mg%

b) 30 mg%

c) 40 mg%

d) 50 mg%

Correct Answer - B
Ans. is 'b' i.e., 30 mg%
The statutory limit of alcohol level in blood in India while driving beyond which driving is considered as crime is 30 mg%.
It is covered under S. 185 Motor Vehicle Act 1988.
The punishment for first offence is fine upto Rs. 2000/- or 6 months of imprisonment or both and for second or subsequent offence fine upto Rs. 3000/- or imprisonment upto 2 years or both.

## 716. What is the level of alcohol in blood beyond which person is condidered intoxicated ?

a) 40 mg%

b) 80 mg%

c) 120 mg%

d) 140 mg%

Correct Answer - D
Ans. is 'd' i.e., 140 mg%
All individuals with a blood alcohol level of 140 mg% are considered intoxicated to the point where they cannot deal with unusual, emergency or non - customary problems.

## 717. The pathways followed by corrosive acids in stomach is called ?

a) Curling ulcer

b) Cushing ulcer

c) Magenstrasse

d) None

Correct Answer - C
Ans. is 'c' i.e., Magenstrasse
Magenstrasse is the term applied to the pathway acidic agents follow in stomach.
The pathway of acids and alkalis in food filled stomach starts along the lesser curvature of the stomach and leads to the pylorus, which explains the location of greatest damage in food filled stomach.
Stomach without food have significant injury in the lower half of two thirds and may have sparing of fundus.

## 718. Chocolate Brown postmortem staining is seen in ?

a) KCl poisoning

b) Opium poisoning

c) $H_2S$ poisoning

d) Cyanide poisoning

Correct Answer - A
Ans. is 'a' i.e., KCl Poisoning

**719. Bitter almond odour is percieved in poisoning with?**

a) Cobalt

b) Arsenic

c) Cyanide

d) Lead

Correct Answer - C
Ans. is 'c' i.e., Cyanide

## 720. Trousseau sign positive in which poisoning ?

a) Citric acid

b) Oxalic acid

c) Acetic acid

d) Carbolic acid

Correct Answer - B
Ans. is 'b' i.e., Oxalic acid
Trousseou's sign and chovstek's sign are seen in hypocalcemia.
Oxalic acid poisoning can cause hypoclacemia.
**Oxalic acid**

- It is also known as *salt of sorrel or acid of sugar.* It is used to erase writing, as bleaching agent and in calico printing. It occurs in leaves of *rhubarb.*
- Local effects : Oxalic acid rarely damages the skin but readily corrode the mucus membrane of digestive tract.
- Systemic : *(i) Shock :* Large doses can cause death from shock; *(ii) Hypocalcemia :* Oxalic acid readily combines with calcium to cause hypocalcemia, which may present as tingling, numbness, twitching, tetany, and convulsions, *(iii) Renal damage :* It is due to *oxaluria* which may cause *tubular necrosis.*
- Antidote : Any calcium preparation (e.g. calcium gluconate/chloride, lime water, suspension of chalk) which converts poison into insoluble calcium oxalate is an antidote for oxalate poisoning.

## 721. Tactile hallucination seen in abuse with ?

a) Heroine

b) Cocaine

c) Cannabis

d) Alcohol

Correct Answer - B

**Ans. is 'b' i.e., Cocaine**

Magnan's symptoms is tactile hallucination (formication) i.e. feeling of bugs crawling under the skin is seen with cocaine abuse/ poisoning.

**Cocaine**

Cocaine is an alkaloid derived from the Coca bush, *Erythrexylum CoCa.* It was the first *local anaesthetic* which was used clinically.

Toxicity of cocaine may be : ?

A) Acute toxicity : - Acute cocaine intoxication is characterized by : *?*

*1) Sympathetic hyperactivity :* - Tachycardia, hypertension, mydriasis, sweating, nausea & vomiting.

*2) Hypomanic state :* - Increased psychomotor activity, grandiosity, elation, hypervigilance, Increased speech output.

B) Chronic overuse : - Chronic overuse can cause : ?

*1)* Psychotic episodes (Cocaine psychosis) : - Persecutory delusions with tactile hallucinations (formination). Tactile hallucinations are manifested as bugs crawling under the skin → *Cocaine bugs or magnan's symptoms.*

2) Other : - Anxiety reaction, compulsive behavior, delirium and delusional disorders.

3) Black pigmentation of tongue and teeth

A combination of cocaine and heroin taken by injection is called speed ball

speed ball.

## 722. Pupil dilatation is seen in poisoning with -

a) Dhatura

b) Ethyl alcohol

c) Brium carbonate

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

**Poisoning of the following is associated with dilated pupils**

- Atropine
- Tricyclic antidepressants
- Phenothiazines
- Dhatura
- Ethyl alcohol
- Barium carbonate

## 723. Fatal dose of KCN is ?

a) 50 - 60 mg

b) 120 -130 mg

c) 180 -190 mg

d) 280 - 300 mg

Correct Answer - D
Ans. is 'd' i.e., 280 - 300 mg
Fatal dose of hydrocyanic acid in the pure form is 50 - 60 mg while as sodium or potassium cyanide is 200 - 300 mg.

## 724. Pin point pupils are seen in all except ?

a) Pontine hemorrhage

b) Organophosphorus poisoning

c) Opium poisoning

d) Barbiturate poisoning

Correct Answer - D
Ans. is 'd' i.e., Barbiturate poisoning

- Pin point pupil *can* be caused by : Opioids (morphine), organophosphates, phenothiazines, clonidine, mushroom poisoning, chloral hydrate, carbolic acid and pontine hemorrhage.

## 725. Nysten's rule pertains to ?

a) Rigor mortis

b) Identification

c) Bullet injuries

d) Putrefaction

Correct Answer - A

**Ans. is 'a' i.e., Rigor mortis**

**Rigor mortis**

- It is defined as contraction, stiffening, shortenig and opacity of muscles after death.
- It occurs after molecular (cellular) death. In tropical countries (e.g. india), it *begins 1-2 hours after death,* takes further 2 hours to develop, and lasts for 18-36 hours in summer and 24-48 hours in winter.
- In temperate countries, it begins in 3-6 hours, takes further 2-3 hours to develop and lasts for 2-3 days.
- All muscles of body are involved, i.e. voluntary or involuntary.
- However, it does not start in all muscles simultaneously (nysten's rule).
- Involuntary muscles (heart) are involved first than voluntary muscles.
- Sequence of muscles involvement is as follows : *Heart > upper eyelid > neck > jaw > face > chest > upper limb > abdomen > lower limb > finger and toes.*
- It passes off in the same order in which it has appeared.

## 726. Hunger pangs are seen how long after starvation ?

a) 6 hours

b) 12 hours

c) 24 hours

d) 48 hours

Correct Answer - C
Ans. is 'c' i.e., 24 hours
When hunger contractions start to occur in the stomach, they are informally referred to as hunger pangs. Hunger pangs usually do not begin until 12 to 24 hours after the last ingestion of food.

## 727. Extreme hunger in starvation lasts upto -

a) 6 - 12 hours

b) 12 - 24 hours

c) 24 - 36 hours

d) 36 - 48 hours

Correct Answer - D

Ans. is 'd' i.e., 36 - 48 hours

- Starvation is the result of actual deprivation of food or administration of unsuitable food. Starvation may be *:?*

1. *Acute (complete) :* Sudden and complete stopage of food.
2. *Chronic (partial) :* Gradual deficient supply of food.
3. An acute starvation, the reserve carbohydrates, then fat and last the proteins are used up.
4. *Feeling of hunger with hunger pain lasts for 30-48 hours.*
5. After 4-5 days, there is emaciation, absorption fat and loss of weight (7-8 kg in 10 days).

## 728. For phage typing, how many phages of staphylococcus aureus are used ?

a) 12

b) 15

c) 20

d) 23

Correct Answer - D
Ans. is' D i.e., 23

- Bacteriophage typing of staphylococcus is based on the susceptibility of cocci to bacteriophages.
- This is carried out by pattern method where a set of *23 standard typing phages of S. aureus is used* to type staphylococcal isolates and distinguish them from one another by their patterns of susceptibility to lysis.
- The phage-type of a strain is known by the designation of the phages that lyse it.
- For example, if a strain is lysed by phages 83A, 84 and 85, it is called type 83A/84/85.

## 729. Most common biotype of S. aureus causing human infection ?

a) A

b) B

c) C

d) D

Correct Answer - A
Ans. is 'a' i.e., A
Staphylococcus aureus has been classified into six biotypes : A, B, C, D, E and F.
*Most human pathogenic strains belong to biotype A.*

## 730. In pontaic fever, which antigen is seen in urine?

a) Lipopolysaccharide-1

b) Lipopolysaccharide-2

c) Lipopolysaccharide-4

d) Lipopolysaccharide-6

Correct Answer - A
Ans. is 'a' i.e., Lipopolysaccharide-1
Legionella are classified into serogroup on the basis ofgroup *specific lipopolysaccharide (somatic antigen or 'O' antigen).*
Legionella pneumophila sero-group-1 (LP-1) is the most common infecting organism.
Urine test detect LP-1.

## 731. Spores of clostridium perfringens are located ?

a) In the middle of cells

b) At the poles of cells

c) Between middle and pole of cells

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Between middle and pole of cells

- Clostridium perfringens (C. perfringens) is a spore-forming gram-positive bacterium that is found in many environmental sources as well as in the intestines of humans and animals. C. perfringens is commonly found on raw meat and poultry

Spores of clostridium may be:?

1. Terminal: Located at poles.
2. Central: Located in the middle of the cells.
3. Subterminal: Between the middle of the cell and pole of the cells.

## 732. Subterminal spores are seen in ?

a) Cl perfringens

b) Cl tetani

c) Cl tertium

d) None

Correct Answer - A
Ans. is 'a' i.e., Cl perfringens

## 733. Double zone of hemolysis is seen in ?

a) Staphylococcus areus

b) Streptococcus pyogenes

c) Clostridium perfringens

d) Corynebacterium diphtheriae

Correct Answer - C

**Ans. is 'c' i.e., Clostridium perfringens**

Two important characteristic feature of Cl. perfringens are :?

1. Target hemolysis (double zone hemolysis) on blood agar. *It is a narrow zone of complete hemolysis by theta toxin which is surrounded by a wider incomplete hemolysis by alpha-toxin.*
2. Naegler's reaction detects alpha toxin (phospholipase or lecithinase C). When CL. perfringens is grown on a medium with the antitoxin spread on one half of the plate, colonies on the other half without the antitoxin will be surrounded by a zone of opacity. There will be no opacity around the colonies on the half of the plate with the antitoxin, due to the specific neutralisation of the alpha-toxin.

## 734. Virulence factor for clostridium tetani ?

a) Endotoxin

b) Tetanolysin

c) Tetanospasmin

d) Bacteremia

Correct Answer - C

**Ans. is 'c' i.e., Tetanospasmin**

**Pathogenicity of Cl tetani**

- *Cl. tetani has little invasive property and is confined to the primary site of lodgment.* Tetanus results from the action of the potent exotoxin it produces.

**Toxins of Cl tetani**

1) Tetanolysin (Hemolysin)

- Not relevant in the pathogenesis of tetanus.

2) Tetanospasmin (neurotoxin)

- *Responsible for tetanus*
- It is plasmid coded
- In the brainstem and spinal cord it blocks release of the inhibitory neurotransmitter glycine and 'yaminobutyric acid (GABA).
- It resembles strychnine in its effects, but it acts presynaptically, while strychnine acts postsynaptically. o Tetanus toxin and botulinum toxin resemble each other in their aminoacid sequences.

3) Nonspasmogenic, peripherally active neurotoxin

- Its role is not known

## 735. Mechanism of action in pathogenesis of Pseudomembranous colitis by Cl difficle ?

a) Due to invasiveness

b) Due to endotoxin

c) Due to exotoxin

d) Due to NM blockade

Correct Answer - C

**Ans. is 'c' i.e., Due to exotoxin**

**Pathogenesis of pseudomembranous colitis is due to production of two large toxins by C. difficile :**

i) Toxin A (an enterotoxin)

- Is a potent neutrophil chemoattractant
- Causes disruption of cell cytoskeleton by glycosylation of GTP - binding proteins that regulate the actin cell cytoskeleton.

ii) Toxin B (a cytotoxin)

- Causes disruption of cell cytoskeleton by similar mechanism.

## 736. Gram positive, catalase negative cocci ?

a) Staph aureus

b) Staph epidermidis

c) Staph saprophyticus

d) Pneumococcus

Correct Answer - D
Ans. is 'd' i.e., Pneumococcus

## 737. Bullous impetigo is caused by ?

a) Streptococcus

b) Staphylococcus

c) Staphylococcus

d) Y. Pestis

Correct Answer - B
Ans. is 'b' i.e., Staphylococcus
**Impetigo**

- Impetigo is a highly contagious, Gram-positive bacterial infection of superficial layer of epidermis. Impetigo occurs in Two forms : ?

**1. Non - bullous impetigo (Impetigo contagiosa)**

- It is the most common bacterial infection of children (occurs mainly in children in contrast to Bullous impetigo which occurs in infants). It is caused by both staphylococcus aureus and hemolytic group A streptococcus (Str. pyogens), though it is mostly caused by staph aureus. Most commonly occurs on face, i.e., around nose & mouth; and exposed parts, i.e., arms, legs. Presents erythematous macule/papule which changes into vesicle which soon ruptures with formation of crusting. Crust has characteristic features : -

1. Honey-yellow colour in streptococcal impetigo.
2. Waxy in staphylococcal impetigo.

- Lesion heal without scarring. Mucous membrane involvement is rare. Lymphadenopathy is common

**2. Bullous impetigo**

- It is caused by staphylococcus aureus most often phage type 71. It usually occurs in infants and manifests as vesicle that develop into bulla and later a pustule without any surrounding erythema. It mainly occurs on face. Mucous membrane may be involved (in contrast to

impetigo contigiosa). Lymphadenopathy is rare.

## 738. Scarlet fever is caused by

a) Streptococcus agalactie

b) Streptococcus pyogenes

c) Streptococcus pneumoniae

d) Streptococcus equisimilus

Correct Answer - B
Ans. is 'b' i.e., Streptococcus pyogenes
Infections caused by streptococcus pyogenes

- Scarlet fever consists of streptococcal pharyngitis, accompanied by a characteristic rash which has a tiny red pinpoint appearance with sand-paper like texture.
- It occurs due to production of erythrogenic toxin

Respiratory infections

- Sore throat is the most common of streptococcal disease. It may be localised as tonsillitis as in older children and adults or it may involve the pharynx more diffusely (pharyngitis) as in younger children. Otitis media.

## 739. Infective endocarditis after tooth extraction is probably due to ?

a) Streptococcus viridans

b) Streptococcus pneumoniae

c) Streptococcus pyogenes

d) Staphylococcus aureus

Correct Answer - A

Ans. is 'a' i.e., Streptococcus viridans

- *Viridans streptococci are normally resident in the mouth and upper respiratory tract. They cause transient bacteremia following tooth extraction or other dental procedures; and get implanted on damaged or prosthetic valves or in a congenitally diseased heart, and grow to form vegetations.*
- They are ordinarily nonpathogenic but can on occasion cause disease. In persons with preexisting cardiac lesions, they may cause bacterial endocarditis, Str. sanguis being most often responsible.
- Str. mutans is important in causation of dental caries.
- The transient viridans streptococcal bacteremia induced by eating, tooth-brushing, flossing and other source of minor trauma, together with adherence to biological surfaces, is thought to account for the predilection of these organisms to cause endocarditis.
- Viridans streptococci are also isolated, often as a part of a mixed flora, from sites of sinusitis, brain abscess and liver abscess.
- Viridans streptococcal bacteremia occurs relatively frequently in neutropenic patients, particularly after bone marrow transplantation or high dose chemotherapy for cancer.

**Treatment of varidans streptococcal infections include :-**

.. *Bacteremia in neutropenic patients* → Vancomycin.

2. *Other infection* → Penicillin.

## 740. Shigella are be divided into subgroup on the basis of ability to ferment -

a) Lactose

b) Maltose

c) Fructose

d) Mannitol

Correct Answer - D
**Ans. is 'd' i.e., Mannitol**
Fermentation of mannitol is of importance in classification Shigella

| Mannitol fermenting | Mannitol nonfermenting |
| --- | --- |
| *Sh. flexneri (sub group B)* | *Sh. dysenteriae (sub group A)* |
| *Sh boydii (sub group C)* | |
| *Sh. Sonnei (sub group D)* | |

## 741. Shiga toxin acts by ?

a) Activating adenylyl cyclase to increase cAMP

b) Activating guanylyl cyclase to increase cGMP

c) Inhibiting protein synthesis

d) Inhibiting DNA replication

Correct Answer - C
Ans. is 'c' i.e., Inhibiting protein synthesis

## 742. Selective medium for shigella ?

a) Chocolate agar

b) BYCE medium

c) Hektoen agar

d) EMJH medium

Correct Answer - C
Ans. is 'c' i.e., Hektoen agar

## 743. Phenylalanine deaminase test is positive in ?

a) Salmonella

b) Proteus

c) Vibrio cholerae

d) Helicobacter

Correct Answer - B
Ans. is 'b' i.e., Proteus
*The distinctive character of proteus genus is deamination of phenyl alanine to phenyl pyruvic acid (PPA + ye)*

## 744. Enteric fever is caused by:
***September 2005***

a) Salmonella typhi

b) Salmonella paratyphi A

c) Salmonella paratyphi B

d) All of the above

Correct Answer - D
Ans. D: All of the above
Typhoid fever is caused by *Salmonella typhi.*
Paratyphoid fever is caused by *Salmonella paratyphi* A, B and C.
The term enteric fever encompasses both typhoid and paratyphoid fevers.

## 745. Salmonellae other than S typhi and S paratyphi cause ?

a) Typhoid fever

b) Enteric fever

c) Gastroenteritis

d) All of the above

Correct Answer - C

**Ans. is 'c' i.e., Gastroenteritis**

**SALMONELLOSIS**

- Salmonellosis is referred to the infection caused by bacteria of genus *salmonella.*
- Salmonellosis is of two types?

1. *Typhoidal Salmonellosis* caused by S.typhi and paratyphi 'A','B' and 'C' (has been explained, see previous explanations)
2. *Non-typhoidal Salmonellosis*

**Non-tvphoidal Salmonellosis (NTS)**

It is the *most common type of salmonellosis (* more common than typhoidal salmonellosis)

**Common NTS species are?**

i. *S. enteritidis*
i. *S. heidelburg*
i. *S. hadar*
v. *S. typhimurium*
v. *S. newport*

*Unlike typhoid salmonella (S. typhi and S. paratyphi), where only reservoir is humans; non-typhoidal salmonella can be acquired from multiple animal reservoirs.*

**Transmission is most commonly associated with?**

i. *Animal food products especially eggs, poultry, undercooked meat*
i. *Dairy products*
i. *Fresh produce contaminated with animal waste*

## 746. Chronic carrier of typhoid shed bacilli for ?

a) 1-3 weeks after cure

b) 3 weeks to 3 months after cure

c) 3 months - 1 year after cure

d) More than 1 year after cure

Correct Answer - D
Ans. is 'd' i.e., More than 1 year after cure
**Carriers**

- Bacilli presist in the gall bladder or kidney and are eliminated in the feces (fecal carriers) or urine (urinary carrier), respectively.
- The development of the carrier state is more common in women and in older age groups ( over 40 yrs)
- Carriers are the more frequent source of infection than cases.
- Urinary carriage is less frequent but more dangerous than intestinal carrier - *Park PSM*
- Urinary carrier is generally associated with some urinary lesions such as calculi or schistosomiasis.
- Presence of Vi antibody indicates the carrier state.

## 747. Enrichment media for cholera ?

a) VR medium

b) TCBS medium

c) Cary-Blair medium

d) Alkaline peptone water

Correct Answer - D
Ans. is 'd' i.e., Alkaline peptone water

## 748. Optimal percentage of NaCl for V cholerae ?

a) 1%

b) 2%

c) 3%

d) 4%

Correct Answer - A
Ans. is 'a' i.e., 1%

## 749. Transmission of cholera is through ?

a) Fecally contaminated food

b) Fecally contaminated water

c) Contaminated food by vomits of a case

d) All of the above

Correct Answer - D
*Man* is the *only reservoir. The immediate source* of infection are the *stools and vomits* of cases and carrier. *Infection is acquired through fecally contaminated water or food. Chlorination of water is effective against V cholerae.*
There are following tyes of carrier in cholera.
*i) Incubatory :* Shed vibrios only in the brief incubation period of 1-5 days.
*ii) Convalescent :* Shed vibrios for 2-3 weeks.
*iii) Healthy or contact carrier :* Has had subclinical infection and shed vibrios for less than 10 days.
*iv) Chronic carriers :* Can shed vibrios for months or years and may have persistent infection in gall bladder.

## 750. Most halophilic vibrio ?

a) V cholerae

b) V vulnificus

c) V alginolyticus

d) V parahemolyticus

Correct Answer - C
Ans. is 'c' i.e., V alginolyticus
V alginolyticus is most salt tolerant (most halophilic) species of vibrio.

## 751. True about vibrio parahemolyticus ?

a) Polar flagella

b) Non halophilic vibrio

c) Non-capsulated

d) Requires NaCI

Correct Answer - D
Ans. is 'd' i.e., Requires NaCI
It is halophilic vibrio.
* Inhabits the coastal sea, where it isfound inftshes arthopods such as shrimps and ctabs and molluscs such as oyster.
* It resembles the cholera vibrio except that:
--> It is capsulated.
--> Shows bipolar staining
* Produces peritrichous flagella when grown on solid mediun (V. cholerae has polar flagella), in liquid medium polar flagella are formed.
* It grows, only in media containing NaCl, optimum conc.is 2-4 %, lts enteropathogenic is closely linked to
its ability to cause hemolysis on Wagatsuma agar t the Kanagawa phenomenon.

## 752. Kanagawa's phenomenon is seen in ?

a) Pseudomonea aeuroginosa

b) Vibrio parahemolyticus

c) Shigella sonie

d) Proteus mirabilis

Correct Answer - B
Ans. is 'b' i.e., Vibrio parahemolyticus
Strains of vibrio parahemolyticus isolated from patients are always hymolytic on Wagatsuma agar, while strains from environmental sources are always non-hemolytic.
This linkage of enteropathogenicity to ability of hemolysis on Wagatsuma agar is called Kanagawa's phenomenon.

## 753. True about vibrio vulnificus ?

a) Causes diarrhea commonly

b) Halophilic

c) Drug of choice is penicillin

d) Produces shiga toxin

Correct Answer - B
**Ans. is 'b i.e., Halophilic**
**V. Vulnificus**

- V. vulnificus is a *halophilic vibrio.* It has been linked to two distinct syndrome.

## 754. True about Campylobacter jejuni ?

a) Obligate aerobe

b) Oxidase negative

c) Grows at 42°C

d) Non-motile

Correct Answer - C

**Ans. is 'C' i.e., Grows at 42°C**

**Campylobacter jejuni**

**Morphology**

- Gram negative
- Comma shaped
- Motile with a single polar flagellum → Darting or tumbling motility
- Non capsulated
- Non Sporing

**Culture**

- Growth occurs under microaerophilic conditions (5% $O_2$, 10% $CO_2$ and 85% $N_2$).
- Thermophilic, growing at 42°C (Can grow at 37°C, but incubation at higher temperatures suppresses normal fecal flora.)

**Biochemical reactions**

- Do not ferment carbohydrate
- Catalase and oxidase-positive
- Nitrate reduction positive

## 755. Culture medium for campylobactor jejuni ?

a) BYCE medium

b) Skirrow's medium

c) Thayer-Martin medium

d) TCBS medium

Correct Answer - B
Ans. is 'b' i.e., Skirrow's medium

## 756. Culture media used for 0157 : H7 Entero-hemorrhagic E coli ?

a) Sorbitol containing agar

b) Mannitol containing agar

c) Sucrose containing agar

d) Dextrose containing agar

Correct Answer - A

**Ans. is 'a' i.e., Sorbitol containing agar**

**Culture of 0157: H7 E.coli**

- E.coli 0157:H7 is not identified on routine stool cultures.
- E.coli 0157:H7 can be specifically detected by the use of modified Mac Conkey media which containssorbitol in place of lactose (SMAC).
- Sorbitol Mac Conkey media is specifically useful for the detection of E.coli 0157:H7 as unlike most strains of E. coli, the 0157: H7 strain does not ferment sorbitol.
- Non fermenting colonies on a Sorbitol Mac Conkey plate (SMAC) therefore suggest the diagnosis of E.coli 0157:H7.
- *Sorbitol Mac Conkey media is the screening method of choice for E.coli 0157:H7.*

## 757. E coli causing hemolytic uremic syndrome ?

a) Enteropathogenic

b) Enterotoxigenic

c) Enteroinvasive

d) Enterohemorrhagic

Correct Answer - D
Ans. is 'd' i.e., Enterohemorrhagic
**SCHERICHIA COLI**

- At least six distinct "pathotypes" of intestinal pathogenic E. coli exist :
- Enteropathogenic E. coli lEnteroadherent E. colil
- It causes diarrhoea in infants and children usually occuring as institutional out breaks.
- It does not produce enterotoxin, nor are they invasive. They adhere to the mucosa of small intestine and cause disruption of the brush border microvilli.
- These strains can be identified by their adhesion to HEP - 2 cells.
- Enterotoxigenic E. coli
- It causes traveller's diarrhoea [ETEC is the most common cause of traveller's diarrhea!.
- It produces enterotoxins. They can produce heat labile toxin (LT) or heat stable toxin or both.
- Toxin production alone may not lead to illness. The strain should first be able to adhere to intestinal mucosa. This adhesiveness is medicated *by fimbrial or colonisation factor antigen (CFA).*

**Enteroinvasive E. coli**

- They themselves resemble shigella and their infection resembles

shigellosis (remember : shiga like toxin is elaborated by enterohemorrhagic E. coli).

- They produce mild diarrhoea to frank dysentry and occur in adult as well as in children.
- They have been termed enteroinvasive because they have the capacity to invade intestinal epithelial cells in vivo and penetrate HeLa or HEP - 2 cells in tissue culture.
- This ability of penetration is plasmid determined which codes for outer membrane antigens called the 'virulence marker antigen' (VMA). The detection of plasmid can be diagnostic.
- For laboratory diagnosis of EIEC, the *sereny test* used to be employed.
- These strains are *non motile, do not ferment lactose or ferment it late* with acid without producing any gas.

**Enterohemorrhagic E. coli or verotoxigenic E. coli**

- These strains produce verocytotoxin (VT) or shiga like toxin (SLT)
- They can cause mild diarrhoea to fatal hemorrhagic colitis.
- Shiga like toxin belongs to class ribosome inactivating proteins (RIPs). It inhibits protein synthesis by inhibiting ribosomal function.
- This toxin also acts on vascular endothelium to promote the synthesis of coagulation factor VIII, vWF -* Platelet aggregation.
- They can cause hemolytic uremic syndrome particularly in young children and the elderly.
- 0 157 : H 7 is the most prominent serotype of EHEC, associated with HUS, but 06, 026, 055, 091, 0103, 0111, 0113 and OX3 have also been associated with this syndrome.
- The primary target for VT is vascular endothelium.
- The typical EHEC is serotype 0157: H7 which does not ferement sorbital unlike majority of E. coli (but Harrison writes that few species of this serotype can ferment sorbital).
- Some other serotype like 026 : H1 also belongs to this group.
- Laboratory diagnosis of VIEC diarrhea is established by demonstration of the bacilli or VT in feces directly or in culture.

## 758. Satellitism is seen in cultures of?

a) Hemophilus

b) Streptococcus

c) Klebsiella

d) Proteus

Correct Answer - A
Ans. is 'a' i.e., Haemophilus
Satellitism

- The growth of Haemophilus influenzae is scanty on blood agar, as the factor V is not freely available, being imprisoned inside the red blood cells. Growth is, therefore, better if the source of the V factor is also provided.
- When Staph aureus is streaked across a plate of blood agar on which a specimen containing H. influenzae has been inoculated, after overnight incubation, the colonies of H. influenzae will be large and well developed alongside the streak of staphylococcus, and smaller further away. This phenomenon is called satellitism.
- Satellitism is due to a high concentration of factor 'V' in staph aureus which is released into medium and is used by H. influenzae.

## 759. Mycobacterium tuberculosis grows in LJ media in?

a) 1 0- 14 days

b) 2-3 weeks

c) 4-8 weeks

d) > 10 weeks

Correct Answer - C
Ans. is 'c' i.e., 4-8 weeks

- M tuberculosis produces visible colonies on solid media (L.J. media) in 4-8 weeks
- Use of liquid media with radiomimetic growth detection (BACTEC-460) and the identification of isolates by *nucleic acid probes give result in 2-3 weeks.*

## 760. Liquid medium for tuberculosis ?

a) LJ medium

b) Dorset medium

c) Loeffler's medium

d) MGIT

Correct Answer - D
Ans. is 'd' i.e., MGIT
Mycobacterial growth indicator tube (MGIT) is an automated liquid culture method. It contains 7 ml of modified Middle brook 7 H9 Broth base.

## 761. Fastest method for diagnosis of TB -

a) Gene expert

b) LJ medium

c) TB MGIT

d) BAC, IEC

Correct Answer - A
**Ans. is 'a' i.e., Gene expert**
**GeneXpert MTB/RIF**

- The Xpert MTB/RIF detects DNA sequences specific for Mycobacterium tuberculosis and rifampicin resistance by polymerase chain reaction.
- It is based on the Cepheid GeneXpert system, a platform for rapid and simple-to-use nucleic acid amplification tests (NAAT).
- The Xpert MTB/RIF purifies and concentrates *Mycobacterium tuberculosis bacilli* from sputum samples, isolates genomic material form the captured bacteria by sonication and subsequently amplifies the genomic DNA by PCR.
- The process identifies all the clinically relevant rifampicin resistance inducing mutations in the RNA polymerase beta (rpoB) gene in the *mycobacterium tuberculosis* genome in a real time format using fluorescent probes called molecular beacons.
- Results are obtained from unprocessed sputum samples in 90 minutes, with minimal biohazard and very little technical training required to operate.

## 762. Which type of pulmonary TB is most likely to give sputum positive ?

a) Fibronodular

b) Pleural effusion

c) Cavitary

d) None

Correct Answer - C
Ans. is 'c' i.e., Cavitary
*Sputum smears are usually positive in patients with laryngeal TB, endobronchial TB and cavitary pulmonary TB" — Kelley 's*
*"Patients with cavitary pulmonary TB have high bacterial load in their sputum" — Internet*

## 763. True about diphtheria toxin ?

a) Heat stable

b) Acts through cGMP

c) Consists of three fragments

d) Special affinity for brain

Correct Answer - A
Ans. is 'a' i.e., Heat stable
*"Diphtheria toxin is a heat-stable polypeptide, composed of two fragments" - Medical microbiology*
**Diphtheria toxin**

- The diphtheria toxin acts by inhibiting protein synthesis. It inhibits polypeptide chain elongation in the presence of nicotinamide adinine dinucleotide (NAD) by inactivating elongation factor, EF - 2.
- The diphtheria toxin is a protein which consists of two fragments, A and B.
- Both fragments are necessary for the toxic effect :

1. *Fragment A* - has enzymatic activity and inhibits protein synthesis by inhibiting the chain elongation by inactivating the elongation factor - 2 (Ef - 2)
2. *Fragment B* - responsible for binding the toxin to the cells.

- *Toxin has special affinity for certain tissues such as myocardium, adrenals and nerve endings.*
- The strain almost universally used for toxin production is the *"Park williams 8 strain".*

## 764. How does chlamydia differ from other usual bacteria?

a) Lack cell wall

b) Cannot grow in cell free culture media

c) Contains inclusion body

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Contains inclusion body**

Chlamydia produces basophilic (intracytoplasmic) inclusion bodies in infected cells in contrast to eosinophilic inclusion bodies produced by most viruses and hence they are sometimes referred to as Basophilic viruses.

**Unique properties of chlamydiae are**

- Chlamydia is an *obligate intracellular parasite.* This means they can survive only by establishig residence inside animal cells
- They need their host's ATP as an energy source for their own cellular activity. They are energy parasites using a cell membrane transport system that uses ATP from the host system and gives out ADP.
- This obligate intracellular existence makes it impossible to culture these organisms on nonliving artificial media. Due to their small size and failure to grow in cell - free media they were considered to be viruses.
- Chlamydiae grows in cultures of a variety of eukaryotic cell lines Mc Coy or HeLa cells. It may be necessary to treat cells with polyanionic compounds such as DEAD-dextran to reduce the electrostatic barrier to infection. Antimetabolite such as cycloheximide is added to favour competition for host cell amino acid pools. All types of

chlamydiae proliferate in embryonated eggs particulary in the yolk sac.

- The special features in structure and chemical composition of chlamydiae are:

1. The outer cell wall resembles the cell wall of gram negative bacteria
2. It has a relatively high lipid content
3. It is rigid but it does not contain typical bacterial peptidoglycan; perhaps it contain a tetrapeptide linked matrix.
4. N Acetylmuramic acid also appears to be absent from chlamydiae cell wall.

**765. A patient is suffering from pneumonia. Laboratory study shows acid-fast filamentous bacterium. The causative organism is ?**

a) M. tuberculosis

b) Actinomyces

c) Nocardia

d) Mycobacterium Avium intracellulare

Correct Answer - C
Ans. is 'c' i.e., Nocardia
Symptoms of pneumonia by a filamentous acid fast bacterium suggest the diagnosis of Nocardia.

## 766. Frie's test is useful for diagnosis of ?

a) Mycoplasma

b) Rickettsia

c) Sarcoidosis

d) Chlamydia

Correct Answer - D
Ans. is 'd' i.e., Chlamydia

- Fries test (skin hypersensitivity test) was used for LGV (caused by chlamydia trachomatis).
- But it is not used now because of high false positive results.

## 767. Safety pin appearance is seen in ?

a) Vibrio vulnificus

b) Vibrio parahemolyticus

c) Pseudomonas aeuroginosa

d) H. influenzae

Correct Answer - B
Ans. is `b' i.e., Vibrio parahemolyticus
**Bipolar staining (safety pin appearance)**

- Some bacteria display a *safety pin appearance* due to the accumulation of dye at the poles of the cells.
- This characteristic is called *bipolar staining.*
- **Bacteria showing bipolar staining are?**

1. *Calymmatobacter granulomatis (Donovani granulomatis)*
2. Vibrio parahemolyticus
3. Pseudomonas mallei
4. Yersinia pestis
5. Pseudomonas pseudomallei
6. H. ducreyi

## 768. Pseudomonas exotoxin inhibits protein synthesis by inhibiting ?

a) RNA polymerase

b) EF-2

c) Transpeptidase

d) Reverse transcriptase

Correct Answer - B
Ans. is 'b' i.e., EF-2
Exotoxin 'A' of P. aeruginosa inhibits protein synthesis through interference with adenosine diphosphate ribosylation of elongation factor - 2.
**Remember**

- Bacterial toxins inhibiting protein synthesis :
- *Exotoxin A of P aeruginosa*
- *Shiga toxin (Shigella)*
- *Diphtheria toxin*
- *Shiga like toxin or verocytotoxin of EHEC.*

## 769. New York agar is used for ?

a) Salmonella

b) Clostridia

c) Neisseria

d) Bacillus Anthracis

Correct Answer - C
Ans. is 'c' i.e., Neisseria
New York City (NYC) medium is primarily designed for isolation of pathogenic Neisseria.

- It also supports the growth of genital mycoplasma (Mycoplasma hominis and Ureoplasma Urealyticum).
- It is useful in the diagnosis of gonorrhea and mycoplasma infection.
- It consists of primarily a peptone-corn starch agar-base buffered with phosphates and supplemented with horse plasma, horse hemoglobin, dextrose, yeast autolysate and antibiotics.

## 770. Milk ring test is done to detect which organism present in milk?

a) Bordetella

b) Brucellosis

c) Bartonella

d) Salmonella

Correct Answer - B
correct answer- B--> Brucellosis

- For the detection of Brucella in infected animals, pooled milk samples may be tested for bacilli by culture and for antibodies by several techniques.
- In the milk ring test, a sample of whole milk is mixed well with a drop of stained brucella antigen and incubated in a water bath at 70 degrees for 40-50 min.
- If antibodies are present in the milk, the bacilli are agglutinated and rise with the cream to form a blue ring at the top, leaving the milk unstained.
- If antibodies are absent, no colour ring is formed and the milk remains uniformly blue.

Also Know:

- Bordetella is detected using the cough plate method, post nasal swab, and the pernasal swab method.
- Bartonella bacilliformis causes Oroya fever.
- Bartonella quintana causes trench fever.
- Bartonella henselae causes cat scratch disease.
- Salmonella is detected using a widal reaction.

## 771. Indian tick typhus is caused by:

a) R typhi

b) R conorii

c) R akari

d) C burnetii

Correct Answer - B
Ans. is. 'b' i. e., R conorii

## 772. LGV (lymphogranuloma venerum) is caused by ?

a) Treponema pallidum

b) Chlamydia trachomatis

c) Calymmatobacter granulomatosis

d) H Ducreyi

Correct Answer - B
Ans. is 'b' i.e., Chlamydia trachomatis

- Lymphogranuloma venereum (LGV) is a long-term (chronic) infection of the lymphatic system.
- It is caused by any of 3 different types (serovars) of the bacteria Chlamydia trachomatis.
- The bacteria are spread by sexual contact. The infection is not caused by the same bacteria that cause genital chlamydia.
- Chlamydia trachomatis causes eye (conjunctivitis, trachoma), respiratory (pneumonia), and genital tract (urethritis, lymphogranuloma venereum) infections.
- Diagnosis made with nucleic acid test for C trachomatis, LGV serovars diagnosed serologically.

## 773. PLET medium is used in ?

a) Plague

b) Anthrax

c) Typhoid

d) Cholera

Correct Answer - B
Ans. is `b' i.e., Anthrax
Selective *media* for B. antracis *is* PLET medium, consisting of polymyxin, lysozyme, ethylene diamine tetraacetic acid (EDTA) and thallous acetate added to heart infusion agar.

## 774. Waterhouse-Friderichsen syndrome is seen in ?

a) Pneumococci

b) N. meningitidis

c) Pseudomonas

d) Yersinia

Correct Answer - B
Ans. is 'b' i.e., N. meningitidis
**Waterhouse–Friderichsen syndrome** (WFS) is defined as adrenal gland failure due to **bleeding** into the **adrenal glands**, commonly caused by a severe bacterial **infection**. Typically, it is caused by **Neisseria meningitides**. The bacterial **infection** leads to massive **bleeding** into one or (usually) both **adrenal glands**.

- Fulminant meningococcemia (purpura fulminans or Waterhouse - Friderichsen syndrome) is the most rapidly lethal form of septic shock experienced by humans.
- It differs from most other forms of septic shock by the prominence of hemorrhagic skin lesions (petechiae, purpura) and the consistent development of DIC.

## 775. Weil felix reaction is heterophile antibodies reaction due sharing of Rickettsial antigen with

a) Shigella

b) Proteus

c) Chlamydia

d) Mycoplasma

Correct Answer - B

**Ans. is 'b' i.e., Proteus**

**Weil felix reaction**

- This reaction is an *agglutination test* in which sera are tested for agglutinins to 0 antigens of certain nonmotile *proteus strains OX -19, OX - 2 and OX - K.*
- The basis of the test is the sharing of an alkali - stable carbohydrate antigen by some rickettsiae and by certain strains of proteus, P. vulgaris OX - 19 and OX - 2 and P. mirabilis OX - K.
- The test is usually done as a tube agglutination, though rapid slide agglutination methods have been employed for screening

## 776. Mode of transmission of Listeria

a) Ingestion

b) Inhalation

c) Skin inoculation

d) None

Correct Answer - A
**Ans. is 'a' i.e., Ingestion**
LISTERIOSIS
Mode of transmission;

- Foodborne → Most common (most cases are due to serotype 4b)
- Nosocomial → In late-onset neonatal infection.
- L monocytogenes enters the body through the gastrointestinal tract after ingestion of contaminated foods such as cheese, fruit, or vegetables.
- The organism has several adhesion proteins (Ami (an autolysin amidase), Fbp A (fibronectin binding protein), and flagellin proteins) that facilitate bacterial binding to the host cells and that contribute to virulence.
- Iron is an important virulence factor. Listeria produces siderophores and is able to obtain iron from transferrin.

## 777. Frisch bacillus affects most commonly

a) Mouth

b) Nose

c) Eye

d) Ear

Correct Answer - B
Ans. is 'b' i.e., Nose

- Frisch bacillus is Klebsiella rhinoscleromatis, which causes rhinoscleroma, a granulomatous disease of the nose.
- K pneumoniae subspecies rhinoscleromatis form rhinoscleroma, a destructive granuloma of the nose and pharynx.
- Klebsiella granulomatis (formerly Calymmatobacterium granulomatis) causes a chronic genital ulcerative disease, granuloma
inguinale, an uncommon sexually transmitted disease

## 778. Bile esculin agar is used for ?

a) Group A streptococcus

b) Group B streptococcus

c) Group C streptococcus

d) Enterococcus

Correct Answer - D
Ans. is 'd' i.e., Enterococcus
**Enterococcus**

- Majority of the infections are caused by *E. faecalis and E. faecium.* Less frequently isolated species are E. gallinarum, E. durans, E. hirae and E. avium.
- Enterococci are *normal inhabitants of the large bowel of human adults,* although they usually make up < 1% of the culturable intestinal microflora.
- They are catalase negative (as all streptococci).

**Their characteristic feature is that they can grow in presence of *:?***

1. *40% bile*
2. *6·5% Sodium chloride*
3. *At pH 9.6*
4. *At 45°C (relative heat resistant surving 60°C for 30 minutes)*
5. *In 0-1% methylene blue milk*

- They hydrolyze esculin. They grow in presence of 40% bile and hydrolyze esculin → Bile esculin positive.
- They are PYR (Pyrrolidonyl Arylamidase) positive.
- They are usually *non-hemolytic (gamma-hemolytic),* but some-times *may show alpha or beta hemolysis.*

## 779. Rash is not caused by ?

a) Salmonella

b) Shigella

c) Meningococci

d) Staphylococcus

Correct Answer - B
Ans. is 'b' i.e., Shigella
Salmonella (typhoid) and meningococci cause morbiliform rash.
Staphylococcus causes scarlentiform rash in TS S and SSSS.

**Infections causing Exanthems (acute generalized rash)**

**Morbilliform**

- *Viral :* Measles (rubeola), *rubella,* erythema infectiosum, EBV, CMV, adenovirus, echovirus, early HIV, coxasackie virus.
- *Bacterial :* Typhoid, Early secondary syphiis, Early rickettsia, Early meningoccemia.

**Scarlentiform**

- Scarlet fever (streptococcus).
- Toxic shock syndrome.
- Staphylococcal scalded skin syndrome.

## 780. Most common cause of infection due to catheter in urinary tract ?

a) E coli

b) Coagulase negative staphylococci

c) Staph aureus

d) Pseudomonas

Correct Answer - A
Ans. is 'a' i.e., E coli
*"E coli cause 80% of acute UTI in patients without catheterization".*
*"E. coil is the most common cause of catheter associated UTI too".*

## 781. Man had uncooked meat at dinner 3 days back, Now presenting with diarrhea. Stool examination shows coma shaped organism with RBC and WBC. Causative organism is ?

a) Vibrio cholerae

b) Shigella

c) Campylobacter jejuni

d) Yersinia enterocolitia

Correct Answer - C

Ans. is 'c' i.e., Campylobacter jejuni

This is a case of dysentery (RBC in stools along with WBC).

Among the given options, 'b', 'c' and 'd' can cause dysentery. But, coma shaped organism is campylobactor jejuni.

Based on the depth of intestinal invasion, there are different clinical manifestations of infection with organisms causing diarrhea:-

**No cell invesion (noninflammatory)**

- The bacteria bind to intestinal epithelial cells but do not enter the cell.
- Diarrhea is caused by the release of enterotoxins.
- Watery diarrhea with *no fecal leukocytes* and no systemic symptoms (e.g. fever) occurs.

**Organisms are :**

1. *V cholerae*
2. Clostridium perfringens
3. Cryptosporidia

4. Adenovirus
5. *ETEC*
6. B. cereus
7. Microsporidia
8. Staph. aureus
9. Giardia
10. Rotavirus

**Invasion of the intestinal epithelial cells (Inflammatory)**

- The organisms have virulence factors that allow binding and invasion into cells.
- Toxins may be then released that destroy the cell.
- The cell penetration results in a systemic immune response with fecal *leukocytes* as well as fever.
- The cell death results in *RBC leakage into the stool (dysentery).*

## 782. Reservoir of plague is ?

a) Domestic rat

b) Wild rat

c) Rat flea

d) Man

Correct Answer - B
Ans. is 'b' i.e., Wild rat

## 783. Sterols are found in ?

a) Cell wall of Ricketssia

b) Cell membrane of Ricketssia

c) Cell wall of Mycoplasma

d) Cell membrane of Mycoplasma

Correct Answer - D
Ans. is 'd' i.e., Cell membrane of Mycoplasma
Mycoplasma lack cell wall. They are bounded by *triple layered unit membrane that contains sterol.* o Thus they require cholesterole and related sterols.

## 784. Mechanism action of botulinum toxin ?

a) Increased cAMP

b) Increased cGMP

c) Inhibition of acetylcholine release

d) Inhibition of noradrenaline release

Correct Answer - C

**Ans. is 'c' i.e., Inhibition of acetylcholine release**

**Botulinum Toxin**

- Cl. botulinum produces a powerful exotoxin that is responsible for its pathogenicity.
- *The toxin differs from other exotoxins in that it is not released during the life of organism. It is produced intracellularly and appears in the medium only on the death and autolysis of the cell.*
- It is the most toxic substance known.
- Toxin is heat labile, but spores are highly heat resistant.
- It acts by blocking the release of acetylcholine at synapses and neuromuscular junction. It acts presynaptically.
- *Toxin of all types (A, B, C, D, E, F, G) are neurotoxin except C2 which is a cytotoxin (enterotoxin).*

## 785. All selective media are correctly matched except ?

a) V cholerae - TCBS medium

b) Pseudomonas - Cetrimide agar

c) M tuberculosis - LJ medium

d) Campylobacter - BCYE medium

Correct Answer - D
Ans. is 'd' i.e., Campylobacter - BCYE medium

## 786. Agar media used for Haemophilus influenza ?

a) Blood agar

b) Chocolate agar

c) Tryptose agar

d) BYCE agar

Correct Answer - B
Ans. is 'b' i.e., Chocolate agar

## 787. Earliest growth of diphtheria is detect on which media ?

a) Potassium tellurite media with iron

b) McConkey's agar

c) Dorset egg medium

d) Loeffler's serum slope

Correct Answer - D
Ans. is 'd' i.e., Loeffler's serum slope
Diphtheria bacilli grow on Loeffler's serum slope very rapidly and colonies can be seen in 6-8 hours, long before other bacteria grow.

## 788. Tunica reaction is positive in ?

a) R prowazekii

b) R typhi

c) R tsutsugamushi

d) R akari

Correct Answer - B
Ans. is 'b' i.e., R typhi
**Neill - Mooser (Tunica) reaction**

- When male guinea pigs are inoculated intraperitoneally with blood from a case of endemic typhus or with a culture of *R. typhi (R. mooseri)* they develop fever and a characteristic scrotal inflammation.
- This reaction is used to differentiate R. typhi and R. prowazekii.

## 789. Most common species of pseudomonas causingintravascular catheter related infections is ?

a) P. cepacia

b) P. aeruginosa

c) P. maltiphila

d) P. mallei

Correct Answer - B

P. aeruginosa *[Ref- Harrison 17 th/e p. 838, 839; The Internet journal of Anaesthesiology]*

*Most common species of pseudomonas associated with intravascular catheter is Pseudomonas Aeruginosa.*

Intravascular catheter related infections

- Indwelling vascular catheters are a leading source of bloodstream infections.
- Amongst indwelling vascular catheters, *central venous catheters are the most common culprits.*

Pathogenesis

- There are four potential sources for catheter related infections *?*
  *1) The skin insertion site*
  *2) The catheter hub*
  *3) Hematogenous seeding from a distant infection*
  *4) Contaminated infusate*
- *The skin insertion site and the catheter hub are by for the two most important sources.*
- Approximately 65% of catheter related infections originate from the *skin flora, 30%* from the *contaminated hub* and 5% from *other*

*pathways.*

- For short term catheters, *skin contamination is the most likely mechanism of pathogenesis.*
- On the other hand, for long term catheters, *hub contamination is more frequent because such catheters often have to be intercepted and manipulated.*
- *Skin organisms* migrate from the skin insertion site along *the external surface of catheter,* colonizing the distal intravascular tip of the catheter, and ultimately causing blood-stream infection. On the other hand, in hub related infections, organisms are usually introduced into the hub *from the hands of medical personnel* and the organisms migrate along the internal surface of the catheter, where they can cause a bloodstream infection.

Microbiology

- Most of the micro-organisms implicated in CRIs arise from the skin flora.
- *Staphylococci are the most frequently isolated pathogens, paricularly coagulase-negative staphylococci.*

Etiology of catheter related infection

| Microorganism | Percentage |
|---|---|
| • Coagulase negative staphylococci | 30 - 40 |
| • Staph aureus | 5 - 10 |
| • Enterococci | 4 - 6 |
| • Candida spp. | 3 - 6 |
| • *Pseudomonas aeruginosa* | 2 - 5 |
| • Enterobacter spp | 1 - 4 |
| • Acinetobacter spp. | 1 - 2 |
| • Serratia spp. | <1 |
| • Others | < 1 - 5 |

## 790. Which of the following is incubated at temperature 40-44 degrees ?

a) Vibrio cholerae

b) Pseudomonas aeruginosa

c) Vibrio parahemolyticus

d) E coli

Correct Answer - B
Ans. is 'b' i.e., Pseudomonas aeruginosa
*"The optimum temperature for growth of pseudomonas aeruginosa is 37 degree and is able to grow at temperature as high as 42° C" -* Essentials of Microbiology
**<u>Pseudomonas aeruginosa</u>**
**Morphology**

- Gram negative bacilli
- ***Motile by polar flagellum***
- Non capsulated but many strains have ***mucoid slim layer especially the organisms which are isolated from cystic fibrosis patient.***

**Culture**

- ***Obligate aerobe***
- Colonies emit a distinctive, musty, mawkish, earthy or ***sweet grape-like odour or corn tocolike odour.***
- ***Cetrimide agar is a selective media.***
- Pseudomonas aeruginosa produces a numbers of pigments. The production of these pigments accounts for the colour of colonies.
- *Pyocyanin is produced only by P.aeruginosa and it inhibits the growth of many other bacteria.*
- Pyoverdin may be produced by many other species.

## 791. Varicella zoster virus belongs to which family of DNA viruses ?

a) Poxviridae

b) Herpesviridae

c) Adenoviridae

d) Papovaviridae

Correct Answer - B
**Ans. is `b' i.e., Herpesviridae**
**DNA viruses**
Poxviridae :- Variola, vaccinia, cowpox, monkeypox, tanapox, molluscum contagiosum Herpesviridae :- HSV-1, HSV-2, varicella-zoster, EBV, CMV, HTLV- 1, RK-virus Adenoviride Adenovirus Parvoviridae Parvovirus, Adenosatellovirus, Densovirus Papovaviridae *Papilloma virus (HPV),* Polyomavirus Hepadnaviridae Hepatitis-B virus

## 792. Molluscum contagiosum virus belongs to ?

a) Poxviruses

b) Herpesviruses

c) Picornaviruses

d) Adenovirus

Correct Answer - A
Ans. is 'a' i.e., Poxviruses

## 793. Which of the following is not a pox virus?

a) Cow pox

b) Molluscum contagiosum

c) Small pox

d) Chicken pox

Correct Answer - D

**Ans. is 'd' i.e., Chicken pox**

**Poxviruses causing disease in humans**

- Variola (small pox)
- Buffalopox
- Cowpox
- Molluscum contagiosum
- Vaccinia
- Monkeypox
- Orf
- Tanapox

Chicken pox is caused by varicella - zoster virus, which is a herpes virus.

## 794. Double stranded RNA virus with segmented genome?

a) Influenza

b) Rotavirus

c) Arenavirus

d) Bunyavirus

Correct Answer - B
Ans. is 'b' i.e., Rotavirus

## 795. Double stranded RNA virus ?

a) Rotavirus

b) Measles virus

c) Mumps virus

d) Influenza virus

Correct Answer - A
Ans. is 'a' i.e., Rotavirus

## 796. Smallest Virus is ?

a) Herpes virus

b) Adenovirus

c) Parvovirus

d) Poxvirus

Correct Answer - C
Ans. is `c' i.e. Parvovirus

## 797. Most common pox virus infection in human is ?

a) Smallpox

b) Monkeypox

c) Cowpox

d) Mulluscum contagiosum

Correct Answer - D
**Ans. is 'd' i.e., Mulluscum contagiosum**
Among the given options, smallpox (variola) virus and molluscum contagiosum affect human as their primary host.

- Small pox has been eradicated.
- Molluscum contagiosum is a common skin infection.

## 798. Cause of Herpes Zoster ?

a) Primary infection with VZV

b) Recurrent infection with VZV

c) Reactivation of latent infection of VZV

d) Multiple infection with VZV

Correct Answer - C
Ans. is 'c' i.e., Reactivation of latent infection of VZV
**Varicella zoster virus infection**

- Varicella (Chicken pox) and Herpes zoster are different manifestations of the same virus infection. The virus is therefore called varicella zoster virus (VZA)
- Primary infection with VZV causes chicken pox.
- Reactivation of latent VZV, when immunity has fallen to ineffective levels causes-Herpes zoster
- The virus remains dormant in sensory ganglion of trigeminal nerve and reaches the eye along one or more branches of the opthalmic division of the 5th nerve

**Herpes Zoster (Shingles)**
Occurs in old age 60 years or above
As a consequence of *reactivation of latent infection from the dorsal root ganglion.* o Unilateral vesicular eruptions within a dermatomal distribution
*Dermatomes from T3 to L3 and trigeminal nerve (especially ophthalmic branch) are involved. o Zoster ophthalmicus* - due to reactivation in ophthalmic branch of trigeminal (gasserian) ganglia o Ramsay Hunt Syndrome - due to reactivation in geniculate ganglion of facial nerve. o Complications Post herpetic neuralgia - most debilitating complication

1. Meningeal irritation
2. Transverse myelitis
3. Cutaneous dissemination
4. Patient's with *hodgkin's disease* and *non hodgkin's lymphoma* are at greatest risk for progressive hespes zoster.
5. Bacterial superinfection

## 799. Wrong statement about chicken pox/ herpes zoster?

a) Caused by VZV

b) Chicken-pox primary infection

c) Herpes-zoster recurrent infection

d) Latent infection in trigeminal ganglion

Correct Answer - C
Ans. is 'c' i.e., Herpes-Zoster recurrent infection
Herpes-Zoster is due to reactivation of latent infection (not due to recurrent infection). Other options are correct.

## 800. Most common complication of chicken-pox -

a) Bacterial infection

b) Meningitis

c) Pneumonia

d) Nephritis

Correct Answer - A
**Ans. is 'a' i.e., Bacterial infection**
**Complications of chicken pox**

- The most common infectious complication of varicella is secondary bacterial superinfection of the skin, which is usually caused by streptococcus pyogenes or Staphylococcus aureus.
- *The most common extracutaneous site of involvement in children is CNS.*
- *Varicella pneumonia is the most serious complication following chickenpox in adults.*

## 801. Which myxovirus does not have hemagglutinin and neuraminidase but have membrane fusion protein -

a) Measles

b) Parainfluenza

c) RSV

d) Influenza

Correct Answer - C
Ans. is 'c' i.e., RSV
RSV does not posses hemagglutinin or neuraminidase.
The viral envelope has two glycoproteins?
*i) G protein* → By which virus attaches to cell surface
*ii) F- protein ( Fusion protein )* → which bring about fusion between viral and host cell membranes. It is also responsible for cell to cell fusion, which leads to characteristic *syncytial formation.*

## 802. Virus most sensitive to inactivation by biocides ?

a) Adenovirus

b) Herpes virus

c) Parvovirus

d) Poliovirus

Correct Answer - B
Ans. is 'b' i.e., Herpes virus
*Enveloped viruses are most sensitive to inactivation by biocides.*
Among the given options only Herpesvirus is enveloped virus.
Adenovirus, parvovirus and poliovirus (picornavirus) are non-enveloped viruses.

## 803. Exanthema subitum is caused by ?

a) HHV-6

b) HHV-8

c) Parvovirus

d) Coxsackievirus

Correct Answer - A
Ans. is 'a' i.e., HHV-6
HHV-6 causes roseola infantum (also called exanthema subitum or sixth disease).

## 804. HHV-6 causes ?

a) Erythema infectiosum

b) Kaposi sarcoma

c) Roseola infantum

d) Herpangina

Correct Answer - C
Ans. is 'c' i.e., Roseola infantum

## 805. All cause viral hepatitis except -

a) Measles

b) EBV

c) Rhinovirus

d) Reovirus

Correct Answer - C
**Ans. is 'c' i.e., Rhinovirus**
**Important viruses causing hepatitis:?**
*1) Hepatotropic viruses :* HAV, HBV, HCV, HD V, HEV.
*2) Herpes viruses :* CMV, *EBV,* HSV-1, VZV.
*3) Flaviviruses :* Yellow fever, dengue fever.
*4) Filoviruses :* Marburg virus, Ebola virus.
*5) Occasinal causes Measles virus,* adenovirus, Echoviruses, Coxsackieviruses, influenza virus, parvoviruses, *reoviruses,* mumps virus.

## 806. Which flavivirus causes hepatitis in human ?

a) Hepatitis A

b) Hepatitis B

c) Hepatitis C

d) Hepatitis D

Correct Answer - C
Ans. is 'c' i.e., Hepatitis C

## 807. Which of the following hepatitis viruses is a DNA virus ?

a) Hepatitis C virus

b) Hepatitis B virus

c) Delta agent

d) Hepatitis E virus

Correct Answer - B

**Ans. is 'b' i.e., Hepatitis B virus**

**Hepatitis B virus (HBV)**

- Hepatitis B virus is the most widespread virus and the most important cause of viral hepatitis. o HBV belongs to Hepadna viridae
- HBV is *hepadnavirus type -1*
- Hepatitis B is the only hepatitis virus which has DNA. All others are RNA viruses.
- HBV contains two linear strands of DNA. One of the strands (the plus strand) is incomplete and other is complete (the minus strand) → *Partially double stranded DNA.*
- HBV contains both *DNA-dependent DNA polymerase and RNA dependent reverse transcriptase.*
- *Instead of DNA replication directly from a DNA template, **HB**V relys on reverse transcription of minus strand DNA from a pregenomic RNA intermediate (like retrovirus).*

## 808. Which is not parenterally transmitted

a) HAV

b) HBV

c) HCV

d) HDV

Correct Answer - A
Ans. is 'a' i.e., HAV

## 809. Defective hepatitis virus is ?

a) HAV

b) HBV

c) HCV

d) HDV

Correct Answer - D
**Ans. is 'd' i.e., HDV**
**Hepatitis D (HDV) or Delta virus**

- It is *defective* RNA virus dependent on the helper function of HBV for its replication and expression.
- It contains single stranded RNA (ssRNA) - Defective RNA.
- It has no independent existence and can survive and replicate only as long as HBV infection persists in the host.
- It resembles some plant viruses, such as *viroids or satellite viruses.*
- It has been classified in genus Deltavirus.
- Delta core of HDV is encapsidated by an outer envelope of HBs Ag, so it require cooperative function of HBV.
- Intracellular replication of HDV RNA can occur without HBV but liver injury requires the presence of HBV.
- HDV can cause two types of infection.

## 810. Maternal mortality is more in ?

a) HAV

b) HBV

c) HCV

d) HEV

Correct Answer - D

**Ans. is 'd' i.e., HEV**

**Hepatitis E virus**

- Also known as enterically transmitted non-A non - B (NANB) virus or epidemic NANB.
- It is classified in the genus *Herpesvirus* under the family *caliciviridae.*
- It is a RNA virus with single - stranded positive sense RNA
- It is transmitted by fecal-oral *route.*
- *In India, HEV is responsible for the majority of epidemic and sporadic hepatitis in adults.*
- *An epidemiological feature that distinguishes HEV from other enteric agents is the rarity of secondary person to person transmission* (Secondary attack rate is very low 2-3% as against 10-20 % in HAV infection)
- *A unique feature is the clinical severity and high case fatality rate of 20-40 % in pregnant women, especially in the last trimester of pregnancy.*
- It is characteristically associated with cholestasis

## 811. E antigen (HBeAg) of hepatitis B virus is a product of which gene

a) S

b) C

c) p

d) x

Correct Answer - B

**Ans. is 'b' i.e., C**

**Genes & gene products**

- The genome of HBV is made of circular DNA, but it is unusual because the DNA is not fully double stranded --> one of the strands is incomplete and other is complete → *partially double stranded DNA.*
- There are four known genes encoded by genome —› 'C' , X', `P' ,'S'.

## 812. DNA polymerase of HBV is encoded by which of the following ?

a) S gene

b) C gene

c) P gene

d) X gene

Correct Answer - C
Ans. is `c' i.e., P gene
DNA polymerase of HBV is encoded by P gene

## 813. Infectivity of HBV is indicated by ?

a) HBeAg

b) HbsAg

c) HBV DNA

d) Anti HBs Ag

Correct Answer - A
Ans. is 'a' i.e., H BeAg

## 814. Serum marker after Hepatitis B vaccination ?

a) Anti-HBsAg

b) Anti-HBeAg

c) Anti-HBcAg

d) HBsAg

Correct Answer - A
Ans. is 'a' i.e., Anti-HBsAg

## 815. Super carrier of HBV shows following serum markers ?

a) HBsAg

b) HbsAg + HBV DNA

c) HbsAg + HBeAg + HBV DNA

d) Anti-HBsAg + HBV DNA

Correct Answer - C

**Ans. is 'c' i.e., HbsAg + HBeAg + HBV DNA**

- In HBV infection, there are two types of carriers :

***Super Carriers***

- High titre of HBs Ag, HBe Ag, DNA polymerase and HBV in the circulation
- Highly infective

***Simple carriers***

- Low titre of HBsAg with negative HBe Ag, DNA polymerase and HBV
- Have low infectivity

**816. A 17 years old female presents with sore throat, lymphadenopathy and positive heterophile antibodies test. Diagnosis is ?**

a) Tuberculosis

b) Streptococcal pharyngitis

c) Infectious mononucleosis

d) Cytomegalic inclusion disease

Correct Answer - C
Ans. is 'c' i.e., Infectious mononucleosis
**Laboratory diagnosis**
*In IMN, there is predominantly lymphocytosis with presence of 20% or more atypical lymphocytes.* These *atypical lymphocytes* are *activated T-lymphocytes* which have round or irregularly shaped nuclei, with abundant flowing cytoplasm that characteristically has a dark-staining peripheri.

## 817. Suckling mice is used for isolation of ?

a) Coxsachie virus

b) Pox

c) Herpes

d) Adenovirus

Correct Answer - A
Ans. is 'a' i.e., Coxsackie virus
It is necessary to employ suckling mice for the isolation of coxsackie viruses.
Inoculation is usually made by intracerebral, subcutaneous and intraperitoneal route.
*Adult mice are not susceptible.*

## 818. Syncytium formation is a property of ?

a) Herpes virus

b) Adenovirus

c) Measles virus

d) Rabies virus

Correct Answer - C
Ans. is 'c' i.e., Measles virus

## 819. True about Nipah virus are all except ?

a) Is a paramyxovirus

b) Causes hemorrhagic fever

c) Emerging infection

d) Present in India

Correct Answer - B
Ans. is 'b' i.e., Causes hemorrhagic fever
Nipah virus is an emerging infectious agent belongs to paramyxoviridae.
It was first isolated in Malaysia in 1998, causing encephalitis in domestic pigs, with direct transmission from pigs to human.
There have been Nipah virus infection outbreaks in pigs in Malaysia and Singapore and human disease in Malaysia, Singapore, India and Bangladesh.
Typically the human infection presents as an encephalitis syndrome marked by fever headache, drowsiness, disorientation, mental confusion, coma and death.

## 820. Causative organism of SARS

a) $H_iN_,$

b) Corona virus

c) Rotavirus

d) RSV

Correct Answer - B
**Ans. is 'b' i.e., Corona virus**

**Severe acute respiratory syndrome**

- In November 2002, China experienced an outbreak of an unusual respiratory infection with many deaths
- Severe acute respiratory syndrome (SARS). o It is caused by *Corona virus type – 4.*
- SARS spreads by inhalation of the virus present in droplets or aerosols of respiratory secretions of patients.
- Fecal aerosols may also be infectious. o Incubation period is less than 10 days.

## 821. Influenza pandemic is

a) Seasonal trend

b) Cyclical trend

c) Secular tred

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Cyclical trend
Diseases occurring in cycles spread over a short period show cyclical trends of time distribution.
- It is a type of periodic fluctuation.
- Examples:
-Influenza pandemic: every 7–10 years due to antigenic variations.
- Measles: every 2-3 years in the prevaccination era.
- Rubella: 6-9 years in the prevaccination era.
-Non-infectious conditions can also show cyclical trends.

## 822. Oncogenic DNA virus is ?

a) Retrovirus

b) HBV

c) HIV

d) HTLV

Correct Answer - B
Ans. is 'b' i.e., HBV

## 823. Window period in HIV infection ?

a) 1-2 weeks

b) 4-8 weeks

c) 8-12 weeks

d) > 12 weeks

Correct Answer - B
**Ans. is 'b ' i.e., 4-8 weeks**
**Window period**

- It takes 2-8 weeks to months for antibodies to appear after infection. This period, from *infection to appearance of antibodies,* is called as *window period.*
- During this period patients is seronegative i.e. serological tests (ELISA and Western blot) are negative. o The individual may be highly infectious during this period.

## 824. The chance that a health worker gets HIV from an accidental needle prick is -

a) 1%

b) 10%

c) 95%

d) 100%

Correct Answer - A
Ans. is 'a' i.e., 1%
Common modes of transmission of HIV and their relative risk

| | Types of exposure | Approximate chance of infection per exposure |
|---|---|---|
| Sexual intercourse : | | 0.1-1.0% anal, vaginal, oral |
| II | Blood and blood products, Factor VII | > 90% etc. Blood transfusion |
| III | Tissue and organ semen, cornea, bone marrow, kidney etc. | 50-90% donation, |
| IV | Injections and shared needles by drug addicts Injections with unsterile Needle-stick and other injuries in health staff? Surgical wounds | 0.5-1.0% injuries; |

V Mother to baby :  30% Transplacental
At birth
After birth
Breast milk

## 825. Paralysis in polio is characterized by ?

a) Spasticity

b) Symmetrical

c) LMN type

d) Progressive

Correct Answer - C
Ans. is 'c' i.e., LMN type
**<u>Clinical manifestations of polio</u>**

- **Incubation period ranges from 3-35 days (usually 7-14 days).**

**The clinical spectrum includes :-**

1. *Subclinical (inapparent) infections (95%) : Most common* and play predominant role in spread of infection.
2. *Minor (abortive) illness (4·8%) :* Present with fever, sore throat, headache and malaise.
3. *Aseptic meningitis/ non paralytic polio (1%) :* There are signs and symptoms of meningitis.
4. *Paralytic polio (There is flaccid paralysis with absent reflexes. Respiratory paralysis is the most common cause of death.*

## 826. Virus causing oropharyngeal carcinoma ?

a) EBV

b) HPV

c) HHV-8

d) HTLV

Correct Answer - B
Ans. is 'b' i.e., HPV

## 827. Break bone fever is caused by ?

a) Yellow fever

b) Japanese encephlitis

c) Dengue fever

d) KFD

Correct Answer - C

**Ans. is 'c' i.e., Dengue fever**

Break bone fever (Saddle back fever) is caused by dengue virus.

**Dengue fever**

- Dengue fever *is* caused by *arboviruses (at least 4 serotypes have been recognized)*
- It is transmitted by Aedes *(Aedes aegypti is the main vector).*
- The reservoir of infection is both man and mosquito.
- The transmission cycle is Man-mosquito-man
- Dengue fever occurs both epidemically and endemically. Epidemics starts in rainy season and are usually explosive.
- Aedes mosquito becomes infective by feeding on a patient from the day before onset to the $5^{th}$ day of illness.
- *Various manifestations of Dengue infection*

**A) <u>Classical dengue fever</u> –**

i. Also known as break bone fever
i. Incubation period 2-7 days (3-10 days -4 Park)
i. Onset is sudden with chills and fever. Fever is usually between 39°c and 40°c temperature returns to normal after 5-6 days or subside on about the $3^{rd}$ day and rise again after 5-8 days after onset *(saddle back fever).*
v. Rashes appear in 80% of cases during remission or during second febrile phase. The rash lasts for 2 hours to several days and may be

followed by desquamation.

**B) <u>Dengue Hemorrhagic fever (DHF)</u>-**

- It is a severe form of dengue fever caused by *infection with more than one dengue virus.*
- The severe illness is thought to be due to double infection with more than one dengue virus.
- *Dengue hemorrhagic fever is believed to result from reinfection with a virus of different serotype ( due to enhancing antibodies)*
- DHF usally occurs after sequential infection with any two of the four serotypes of dengue virus.
- Sequence of infection may be important; serotype 1 followed by serotype2 is more dangerous than serotype 4 followed by serotype 2.

## 828. Virus causing Latent infection (or Latent period is shown by which virus) -

a) Rubella

b) HBV

c) Pertussis

d) Rota virus

Correct Answer - B
Ans. is 'b' i.e., HBV

## 829. True regarding arbovirus is all except ?

a) KFD is transmitted by Tick

b) Dengue virus has one Serotype

c) Yellow fever is not seen in India

d) Dengue fever is transmitted by Aedes

Correct Answer - B

**Ans. is 'b' i.e., Dengue virus has one Serotype**

- *KFD is mainly transmitted by Hard tick, but soft tick can also transmit the disease.*
- *Dengue virus has four serotypes.*
- *Yellow fever is not endemic in India, it is distributed in Africa and South America.*
- *Dengue fever is transmitted by Aedes mosquito.*

## 830. Which prion disease affect human ?

a) Scrapie

b) Madcow disease

c) Kuru

d) Bovine spongiform encephalopathy

Correct Answer - C
Kuru prion Infection through ritualistic cannibalism

## 831. Owl eye intranuclear inclusion body is seen in ?

a) Herpes zoster

b) Herpes simplex

c) CMV

d) EBV

Correct Answer - C
Ans. is 'c' i.e., CMV
**CYTOMEGALOVIRUS (CMV)**

- Also known as *salivary gland virus*
- CMV is the *largest virus amongst herpes viruses*
- *They are characterized by enlargment of infected cells (cytomegalic cells) and intranuclear inclusions.*
- Intranuclear inclusion is eccentrically placed and is surrounded by a halo - *owl's eye appearance*
- *Once infected an individual carries CMV for life*
- *CMV is the most common organism causing intrauterine infection.*
- *CMV is the most common pathogen complicating organ transplantation.*

## 832. True about hydatid cyst are all, except ?

a) Most common site is liver

b) Calcification is common in lung

c) May involve kidney

d) Liver cysts are more common in right lobe

Correct Answer - B

**Ans. is 'b' i.e., Calcification is common in lung**

**Hydatid disease**

- Liver cysts
- *The majority of hydatid cysts occur in the liver,* causing symptoms :
- Chronic abdominal discomfort
- Palpable abdominal mass
- Allergic reactions due to cyst rupture - skin rash, anaphylactic shock, or death.
- Abscess formation due to secondry bacterial infection
- Liver cysts occur more frequently in the *right lobe.*

**Lung cyst**

- Second most common organ (after liver)
- Usually asymptomatic
- Occasionally may cause symptoms.
- Least common site of calcified hydatid cyst.

**Radiographic signs**

1. *Meniscus sign*
2. *Water - lily sign, camalote sign*
3. *Rising sun sign, serpent sign*
4. *Empty cyst sign*

## 833. Parasites for which modified ZN stain is used ?

a) Isospora

b) Microsporidia

c) Plasmodium

d) Echinococcus

Correct Answer - A
Ans. is 'a' i.e., Isospora

**834. A patient presents with fever. Peripheral smears shows band across the erythrocytes. Diagnosis is ?**

a) P Falciparum

b) P vivax

c) P ovate

d) P malariae

Correct Answer - D
Ans. is 'd' i.e., P malariae
Band across erythrocytes (band-form trophozoites) is characteristic of P malariae.

## 835. Band form of P malariae is ?

a) Schizoint stage

b) Trophozoite stage

c) Merozoite stage

d) Gametocyte stage

Correct Answer - B
Ans. is 'b' i.e., Trophozoite stage

## 836. Schizoint are not seen in peripheral blood of which malarial parasites ?

a) P vivax

b) P falciparum

c) P ovale

d) P malariae

Correct Answer - B

**Ans. is 'b' i.e., P falciparum**

*In peripheral smear offalciparum malaria following forms are seen*

- *Early ring form*
- *Gametocytes*

Mature trophozoites and schizoint are not found in peripheral blood because schizogony occurs inside the capillary of internal organs (spleen, liver and bone marrow).

## 837. Babesiosis is transmitted by ?

a) Tick

b) Mites

c) Flea

d) Mosquito

Correct Answer - A
**Ans. is 'a' i.e., Tick**
**Babesia**

- Babesiosis is a protozoan disease caused by two species of Babesia : *Babesia microti and Babesia divergens.*
- It is transmitted by *Ioxdid tick.*
- *Babesia infects the RBCs and resides inside the RBCs ( intraerythrocytic).* Intraerythrocytic infection of Babesiosis is characterised by *maltese cross.* Maltese cross is a characteristic arrangement of parasites within the erythrocytes → *Parasites within erythrocytes are arranged such that pointed ends of four parasites come in contact thereby giving a tetrad configuration resembling a maltese cross.* Tetrad forms or 'Maltese cross' appearance is considered *pathognomic* of Babesiosis.
- Clinically Babesiosis presents with chills, fever, mild hepatosplenomegaly, and mild hemolytic anemia. o Treatment includes *Atovaquone plus azithromycin or quinine plus clindamycin.*
- Babesiosis can easily be confused with P. falciparum malaria.
- **Following *two features distinguish Babesiosis from malaria :?***

1. *Presence of maltese cross in Babesiosis (absent in malaria)*
2. *Absence of pigment Hemozoin in Babesiosis (present in malaria)*

**Note -** Maltese cross is also seen in cryptococcus and aspergillus.

## 838. Sabin feldman Dye test is used to demonstrate infection with ?

a) Filaria

b) Toxoplasma

c) Histoplasma

d) Ascaris

Correct Answer - B

Ans. is 'b' i.e., Toxoplasma

- The polyclonal IgG antibodies evoked by infection are parasiticidal in vitro in the presence of serum complement and are the basis for the Sabin - Feldman dye test.

**Laboratory diagnosis of toxoplasmosis**

- Laboratory diagnosis can be made by

1. Microscopic demonstration of the parasite
2. Isolation of the parasite by animal inoculation or tissue culture.
3. Polymerase chain reaction
4. Serology

- The most common method of laboratory diagnosis
- Persons should initially be tested for the presence of Toxoplasma specific IgG antibodies to determine their
- immune status. A positive IgG titre indicates infection with the organism at sometime ( recent or past).
- Then an IgG positive person should have an IgM test. A negative test essentially excludes recent infection. However, a positive IgM test does not always mean a recent infection because toxoplasma specific IgM antibodies may persist for months to year following primary infection. Therefore :?
- Negative IgM with positive IgG always means a past infection.

- Positive IgM with positive IgG indicates possibility of recent infection, but not with 100% surety. It may or may not be recent infection. To differentiate between recent and past infection, IgG avidity test is used.
- It is worth noting here that a third situation is also possible when IgM test is positive but IgG test is negative. In this situation a second sample should be taken after 2-4 weeks and should be tested :?
- If the second sample is positive for IgG and IgM, it indicates that the first sample was taken early in the disease when IgG was not yet developed.
- If the second sample is still negative for IgG with positive IgM, it indicates false positive IgM test.

| **Tests for IgG antibodies** | **Tests for IgM antibodies** |
|---|---|
| IgG ELISA/EIA | IgM indirect flourscent antibody test (IgM IFA) |
| *Sabin- Fieldman dye test* | Double sandwich ELISA |
| IgG indirect flourscent antibody test(IgG IFA) | IgM capture EIA |
| Diffemtial agglutination ( AC/HS) | Immunosorbant agglutination assay ( ISAGA) |
| Avidity test | |

## 839. Ovoviviparous parasite which is associated with autoinfection ?

a) Ancylostoma duodenale

b) Strongyloides stercoralis

c) Enterobius vermicularis

d) Ascaris

Correct Answer - B
Ans. is 'b' i.e., Strongyloides stercoralis
Among the given options, strongyloides and enterobius can cause autoinfection.
Strongyloides is ovoviviparous, whereas enterobius is oviparous.

**840. A patient presents with headache, high fever and meningismus. Within 3 days he becomes unconscious. Most probable causative agent ?**

a) Naegleria fowleri

b) Acanthamoeba castellani

c) Entamoeba histolytica

d) Trypanosoma cruzi

Correct Answer - A
Ans. is 'a' i.e., Naegleria fowleri
Amongst the given options Naeglaria and Acanthamoeba cause amoebic encephalitis.
"The prognosis of Naeglaria encephalitis is uniformaly poor, most patients die within a week".
"Acanthamoeba encephalitis follows a more indolent course".

## 841. Tachyzoites are seen in ?

a) Toxoplasma

b) Toxocara

c) Pulmonary eosinophilia

d) Ascaris

Correct Answer - A
Ans. is 'a' i.e., Toxoplasma
Toxoplasmosis is the disease caused by infection with the *obligate intracellular parasite* Toxoplasma gondii.
**There are two distinct stages in the life cycle of T gondii *:?***
***Nonfeline stage***

- In this stage *tissue cysts (containg bradyzoites)* or *sporulated oocysts* are ingested by intermediate hosts (Human, mouse, sheep or pig).
- The cyst is rapidly digested by the acidic-pH gastric secretion releasing *bradyzoites* or *sporozoites.*
- These bradyzoites or sporozoites enter the small - intestinal epithelium and tranform into rapidly dividing *tachyzoites (endozoites).*
- *The tachyzoites can infect and replicate in all mammalian cells except red blood cells.*
- Tissue cysts containing many bradyzoite develop 7-10 days after systemic tachyzoite infection.
- These tissue cysts occur in a variety of host organs but persist principally within the *CNS* and *muscle.*

***Feline stage (sexual stage)***

- This stage takes place in the definitive host (cat)
- This cycle is associated with formation of oocysts, which are

excreted in cat feces.

- Mature oocysts contain 2 sporocysts, each with 4 sporozoites.
- The formation of tissue cysts in cats constitutes the other part of feline cycle.

## 842. Mucocutaneous leishmaniasis is caused by -

a) L-braziliensis

b) L. tropica

c) L. donovani

d) L-orientalis

Correct Answer - A
Ans. is 'a' i.e., L. braziliensis
Leishmaniasis
***o*** Visceral leishmaniasis (Kala azar) -L. donovani
Cutaneous Leishmaniasis
*a) Oriental sore* - L. tropica
*b) Mucocutaneous leishmaniasis (Espundia)* -L. brasiliensis

## 843. The cystic form of all are seen in man except ?

a) E.histolytica

b) Giardia

c) Trichomonas

d) Toxoplasma

Correct Answer - C
Ans. is 'c' i.e., Trichomonas
Protozoal parasites have two phases.
Cystic phase
**Trophozoite Cystic phase is not seen in :**

- Trichomonas
- Entamoeba gingivalis
- Dientamoeba fragilis

**844. Which of the following is a sexual spore ?**

a) Chlamydospore

b) Sporangiospore

c) Ascospore

d) Phialoconidia

Correct Answer - C
Ans. is 'c' i.e., Ascospore

## 845. True about cryptococcus are all except

a) Primarily infects lung

b) Urease negative

c) India-ink is used

d) All are true

Correct Answer - B

**Ans. is `b i.e., Urease negative**

**CRYPTOCOCCUS NEOFORMANS**

- The only pathogenic yeast
- Four capsular serotypes - A, B, C and D
- It has *polysaccharide capsule*
- *Most infections in immunocompromized patients are caused by serotype A.*
- *Pigeon droppings* commonly contains *serotype A and D.*
- *Eucalyptus tree* contain *serotype B.*
- It is *urease positive.*

**Mode of transmission**

- By inhalation of the fungus into the lung (most common)
- Through skin or mucosa (some times).

## 846. Which of the following fungi is/are difficult to isolate culture ?

a) Candida

b) Dermatophytes

c) Cryptococcus

d) Malassezia furfur

Correct Answer - D
Ans. is 'D' i.e., Malassezia furfur
*Malassezia furfur does not grow on regular sabouraud's medium.*
It requires complex media to grow
M. furfur is a *lipid dependent fungus* and 1% emulsified olive oil is added to sabouraud medium for its cultivation
Two media are now widely employed for all malassezia species.
1. Dixon medium
2. Modified dixon medium

## 847. KOH wet mount is prepared for ?

a) Herpes Zoster

b) Candida

c) Gonorrhea

d) Trichomonas vaginalis

Correct Answer - B
Ans. is 'b' i.e., Candida

## 848. All are true about candida except ?

a) Pseudohyphae seen

b) Produce chlamydospore

c) It is a mould

d) It is a dimorphic fungus

Correct Answer - C
**Ans. is 'c' i.e., It is a mould**
**Candida**

- Candida is a yeast like fungus (not mould).
- *Candida albicans is the most common cause of mucosal candidiasis.*
- All candida species pathogenic for humans are also encountered as *commensals* of humans, particularly in the mouth, *stool* and vagina.
- They grow rapidly on simple media as oval budding cells at 25° to 37°C.
- In tissue, both yeasts and *pseudohyphae* are present.
- Candida albicans is differentiated by other candida :
- It forms *true hyphae* (mycelia) or germ tubes when grown in serum.
- It forms thick walled large spores called *chlamydospores* when grown in corn meal agar.
- It is *dimorphic.*
  **Remember** → *Candida albicans can produce yeast, true hyphae and pseudohyphae.*
- A rapid method of identifying C. albicans is based on its ability to form germ tubes within two hours when incubated in human serum at 37°C Reynolds - Braude phenomenon ( Also known as germ tube test)

## 849. Not true about Histoplasma capsulatum ?

a) Dimorphic fungus

b) May mimic TB

c) Capsulated

d) Mostly asymptomic

Correct Answer - C
**Ans. is 'c' i.e., Capsulated**
**Histoplasma capsulatum**

- A *dimorphic fungus*
- *Non encapsulated → The only medically important capsulated fungus is cryptococcus.*
- Infection is acquired by inhalation of microconidia (small spores) in dust contaminated with bird or bat dropping.
- It causes intracellular infection of *reticuloendothelial system.*
- Clinical manifestations → *Majority of patients are asymptomatic*

## 850. Intermediate host for guinea worm ?

a) Fish

b) Man

c) Cyclops

d) Crab

Correct Answer - C
Ans. is 'c' i.e., Cyclops

## 851. R-factor in bacteria is transfered by ?

a) Transduction

b) Transformation

c) Conjugation

d) Vertical transmission

Correct Answer - C
**Ans. is 'c' i.e., Conjugation**
**Conjugation**

- Bacterial conjugation is the transfer of genetic material between bacteria through direct cell to cell contact or through a bridge- like connection between two cells.
- Conjugation is process where by a donor (male) bacterium makes physical contact with a recipient (female) bacterium.
- *Donor status is determined by the presence of plasmid.*
- This plasmid codes for *specialized fimbria (sex pilus)* and for self transfer.
- Sex pilus (conjugation tube) helps in transfer of genetic material from male bacterium to female bacterium.
- The plasmid is known as *transfer factor* (sex factor or fertility factor).
- *Plasmid may be R factor, which codes for transferrable multiple drug resistance.*
- The DNA of the plasmid replicates during transfer so that each bacterium receives a copy Recipient becomes donor and the donor retains its donor status.

## 852. HEPA filter is used to disinfect ?

a) Water

b) Air

c) Culture

d) Blood

Correct Answer - B
Ans. is 'b' i.e., Air
HEPA (High-efficiency particulate air) filter is used to remove microorganisms from air.
HEPA filter traps airborne particles and microbes.
It can remove > 95% of all particles including microorganisms with a diameter > 0·3 p.m.

## 853. Feces are disinfected best by ?

a) 1% formaldehyde

b) 5% cresol

c) 5% phenol

d) Isopropyl alcohol

Correct Answer - B
Ans. is 'b' i.e., 5% cresol
*"The most effective disinfectant for general use is a coal-tar disinfectant with a Rideal-Walker (RW) coefficient of 10 or more such as cresol".*

## 854. Endoscope tube is sterilized by?

a) Glutaraldehyde

b) Formalin

c) Autoclaving

d) Boiling

Correct Answer - A
Ans. is 'a' i.e., Glutaraldehyde

- 2% Glutaraldehyde (cidex) is most often used for equipment such as endoscope that cannot be sterilized or disinfected by heat.

## 855. Laproscope is sterilized by ?

a) 2% formalin

b) 2% glutaraldehyde

c) Autoclaving

d) Boiling

Correct Answer - B
Ans. is 'b' i.e., 2% glutaraldehyde
All endoscopes (e.g. laproscope) are sterilized by 2% glutaraldehyde (cidex).

## 856. Heat labile liquids are sterilized by ?

a) Hot air oven

b) Autoclaving

c) Membrane filter

d) Moist heat

Correct Answer - C
Ans. is 'c' i.e., Membrane filter
Filters are used to sterilize heat-labile solutions.
Membrane filters are used to sterilize pharmaceutical substances, ophthalmic solutions, liquid culture media, oils, antibiotics and other heat sensitive solutions.

## 857. Cold sterilization is ?

a) Sterilization by negative temperature

b) Sterilization by ionizing radiation

c) Sterilization by liquid $CO_2$

d) Sterilization by non-ionizing radiation

Correct Answer - B
Ans. is 'b' i.e., Sterilization by ionizing radiation

## 858. Lethal effect of dry heat is due to ?

a) Denaturation of proteins

b) Oxidative damage

c) Toxicity due to metabolites

d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above
**HEAT STERILIZATION**
*Heat is the most reliable method of sterilisation and should be the method of choice unless contraindicated.* **o** Sterilization by heat is of two types.
**Dry heat**
Killing effect is due to protein denaturation, oxidative damage and the toxic effect of elevated metabolites.

## 859. Temperature required for holding period of 20 minutes in Hot air oven -

a) 160° C

b) 170° C

c) 120° C

d) 130° C

Correct Answer - B
Ans. is 'b' i.e., 170° C

## 860. Rideal-Walker coefficient is related with ?

a) Disinfecting power

b) Parasitic clearance

c) Dietary requirement

d) Statistical correlation

Correct Answer - A
Ans. is 'a' i.e., Disinfecting power
**Traditional testing of disinfectants**
Two traditional tests for determining the efficiency of disinfectants are *:?*
*1)* *Rideal-Walker test :* Phenol is taken as the standard with unit as phenol coefficient (pheno1=1)
*2)* *Chick-Martin test :* The disinfectant acts in the presence of organic matter (dried yeast or feces).

## 861. Best indicator for sterilization by autoclaving ?

a) Bacillus subtilis

b) Geobacillus

c) Bacillus pumilis

d) Clostridium

Correct Answer - B

**Ans. is 'b' i.e., Geobacillus**

**Biological indicators**

- Biological indicators are standardised preparations of microorganisms used to assess the effectiveness of a sterilization process.
- They usually consist of a population of bacterial spores placed on an inert carrier, for example a strip of filter paper, a glass slide or a plastic tube.
- Most commonly, spores of *Bacillus stereothermophilus (Geobacillus stearothermophilus)* are used. Spores of Bacillus subtilis and Bacillus pumilis are alse used.

## 862. Sterilization is defined as ?

a) Disinfection of skin

b) Complete destruction of all microorganisms

c) Destruction of pathogenic organisms

d) Decrease bacterial count from objects

Correct Answer - B

**Ans. is 'b' i.e., Complete destruction of all microorganisms**

**Sterilization**

- The process by which an article surface or medium is freed of all living microorganisms either in the vegetative or spore state *Complete absence of microorganism.*

**Disinfection**

- Destruction or removal of all *pathogenic organisms* capable of giving rise to infection *reduction in the microorganisms to such a level which is deemed no longer harmful to health.*
- **Unlike sterilization, disinfection is not sporicidal (does not kill spores).**

**Decontamination**

- The process of *rendering of an article or area free of danger from contaminants, including microbial, chemical, radioactive and other hazards.*

**Antisepsis**

- It is defined as" Prevention of infection, usually by inhibiting the growth of bacteria in wound or tissues".

**Antiseptics**

- **Chemical disinfectants** which can be *safely applied to skin or mucous membrane* are called **antiseptics** or **skin disinfactant.**
- **Best and most commonly used antiseptic** *is* **povidone iodine**

**(betadine).** Commonly used skin disinfactants for hand washing are *povidone iodine (betadine), chlorhexidine* and *isopropyl alcohol.*

**Disinfectants**

- Antimicrobials applied only to **inanimate object. They** are **not used for surface disinfection(A"9)** (skin or mucous membrane).

**Germicides**

- These include both **antiseptics and disinfectant.**

## 863. Stool specimen is transported in ?

a) Cary blair medium

b) Blood agar

c) Selenite F broth

d) Compy BAP medium

Correct Answer - A

**Ans. is 'a' i.e., Cary blair medium**

**Transport media for stool specimen are :?**

a. *Cary-Blair medium*
b. Buffered glycerol saline
c. Stuart medium

**Inoculate media for routine stool culture are :-**

a. *Blood agar*
b. *MacConkey agar*
c. Hektoen enteric HE ( agar)
d. Selective media for campylobactor : Campy BAP, skirrow
e. *Selenite F broth* or GN Broth
f. Xylose-lysine deoxycholate agar (XLD agar)

**For specific situations, selective media are used :-**

i. *Vibrio :* TCBS agar or Alkaline peptone broth.
i. *Yersinia :* Cefsulodin-Irgasan-Novobiosin (CIN) agar or Phosphate Buffered Saline (PBS) broth.
i. *E.coli 0157:H7:* Sarbitol-MacConkey agar.

## 864. Which anticoagulant is used when blood is sent for blood culture ?

a) Sodium citrate

b) EDTA

c) Oxalate

d) SPS

Correct Answer - D
Ans. is 'd' i.e., SPS
Many different types of bacteria and fungi have been identified as causative agents of septicemia.
For this reason, many diverse culture media formulations are available in prepared blood culture bottles.
Majority of these media contain 0·03% SPS (Sodium polyanethal sulfonate), a polyanionic anticoagulant, which additionally inhibits complement and lysozyme activity, interferes with phagocytosis and inactivates aminoglycosides.
**Following important blood culture bottles are there :-**
*i) Brain heart infusion (BHI) with PABA (para-aminobenzoic acid)*
*ii) Brucella broth with 6% sorbitol*
*iii) Brucella broth with 10% sucrose*
*iv) Columbia broth*
*v) Thioglycolate medium*
*vi) Tryptic soy broth*

## 865. Triple iron sugar medium contains all, except ?

a) Lactose

b) Sucrose

c) Glucose

d) Maltose

Correct Answer - D

**Ans. is d i.e., Maltose**

**Triple sugar iron agar is used for the differentiation of microorganisms on the basis of :?**

i. Fermentation of *dextrose (glucose), lactose and sucrose.*
i. Production of H2S.

- It is recommended for differentiation of enteric gram negative bacilli from clinical specimens, dairy samples and food products.
- **Contents of the medium are *:?***

i. *Enzymatic digest of casein and animal tissue.*
i. Yeast enriched peptone.
i. *Three sugars : Dextrose (glucose), lactose and sucrose.*
i. Ferric ammonium citrate.
i. Sodium chloride.
i. Sodium thiosulfate.
i. Phenol red.
i. Agar.

- When carbohydrates are fermented, acid production is detected by the phenol red indicator, which is *yellow in acid* and *red in alkaline conditions.*
- Sodium thiosulfate is reduced to hydrogen sulfide ($H_2S$) and $H_2S$

reacts with an iron salt yielding typical black iron sulfide. *Ferric ammonium citrate is hydrogen sulfide indicator.*

**Results**

- Two areas of tube are examined : (i) Butt of the tube, and (ii) Slant of the tube.
- *An alkaline slant (red)- acid butt (yellow) indicates fermentation of dextrose (glucose) only* → red /yellow. Examples are Proteus mirabilis, salmonella thyphimurium and shigella flexneri.
- *An acid slant (yellow) - acid butt (yellow) indicates fermentations of dextrose (glucose), lactose and/or sucrose* → yellow/yellow. Example is E coli.
- *An alkaline slant (red) - alkaline butt (red) indicates no fermentation (non-fermenter)* → red/red. Example is Pseudomonas aeruginosa.
- An alkaline precipitate in butt indicates $H_2S$ production. It is produced by Proteus mirabilis and Salmonella typhimurium.

## 866. Indicator used in MaConkey Agar ?

a) Methylene blue

b) Methyl red

c) Neutral red

d) Bromothymol blue

Correct Answer - C
Ans. is 'c' i.e., Neutral red
MacConkey agar is a selective medium for enteric gram negative bacilli.
It is used to differentiate lactose fermenting enteric bacilli from lactose non-fermenters.
**Composition of MacConkey agar *?***
*1) Enzymatic digest of gelatin, casein and animal tissue :* To provide nutrition.
*2) Lactose :* Fermentable carbohydrate.
*3) Bile salts :* Selective agent and inhibits gram positive organisms.
*4) Crystal violet :* Inhibits gram positive bacteria.
*5) Sodium chloride :* Supplies essential electrolytes and osmotic balance.
*6) Neutral red : pH indicator* (when lactose is fermented, the pH of medium decreases, changing color of neutral red to pink).
7) *Agar :* Solidifying agent.

## 867. Blood agar is an example of ?

a) Enriched media

b) Indicator media

c) Enrichment media

d) Selective media

Correct Answer - A
Ans. is 'a' i.e., Enriched media

## 868. Best specimen for anaerobic culture ?

a) Exudates from wound

b) Pus aspirated in vial

c) Swab from wound

d) Mid-stream urine

Correct Answer - B

Ans. is 'b' i.e., PUS aspirated in vial

- Ideal specimens for anaerobic cultures are *samples of needle aspirates and proper tissue specimens.* Anaerobic swabs are usually discouraged.

**Important specimens are :-**

i. *Local abscess : Needle aspirates.*
i. *Pulmonary :* Transtracheal aspirates, lung aspirates, pleural fluid, protected bronchial wash.
i. *Abdominal :* Abdominal abscess aspirate.
*. *Urinary tract : Suprapubic bladder aspirate.*
*. *Genital tract :* Culdocentesis specimen, endometrial swabs.
i. *CNS :* CSF, Aspirate of abscess.

**Aspirated material then injected into one of the following :?**

a. *Anaerobic swab*
). *Thioglycollate enrichment broth*
:. *Oxygen free vials*

- Exudates, swabs from burns, wound and skin abscesses are generally unacceptable for anaerobic culture. Cysts and abscess are contaminated with normal anaerobic flora.
- Voided and catheterized urine are contaminated with distal urethral anaerobes and are therefore unacceptable for anaerobic culture.

## 869. Aerobic blood culture should be incubated for how many days, before discarding ?

a) 2 days

b) 5 days

c) 10 days

d) 14 days

Correct Answer - D
Ans. is 'd' i.e., 14 days

- Blood specimens of 5 or 10 ml generally are added to bottles containing, 50 or 100 ml of reagent (medium) to achieve a 1:10 blood medium ratio.
- All bottles should be transported to the laboratory as soon as possible and immediately incubeted at 35 ± 2°C in an upright position (Note - Lower incubation temperature may be preferred for isolation of some specific bacteria, e.g. Listeria grows well at 20-25°C).
- A total incubation period of 7 days is generally sufficient for routine isolation procedure, which can be extended up to 14 days before discarding those that do not show evidence of growth.

## 870. Drug resistance in Tuberculosis is due to ?

a) Transformation

b) Transduction

c) Conjugation

d) Mutation

Correct Answer - D
Ans. is 'd' i.e., Mutation

## 871. Method used for acid fast staining ?

a) Robertson's method

b) Ziehl Neelsen

c) Silver imprignation method

d) Dark ground illumination

Correct Answer - B
**Ans. is 'b' i.e., Ziehl Neelsen**
**Acid fast staining**

- After staining with aniline dye, acid fast organisms resist decolourisation with acids.
- Method most commonly used is modified *Ziehl Neelsen.*

## 872. Metachromatic granules are seen in ?

a) Gardenella vaginali

b) Corynebacteria

c) Argobacterim

d) All of the above

Correct Answer - D

**Ans. is 'd' i.e., All of the above**

**Polvpmetahosphate / volutin granules**

- Some bacteria contain granules composed of polymetaphosphate. They were first described in spirillum volutans, so they were called as *Volutin granules.*
- These granules are also known as *Babes Ernst granules* or *polar bodies* or *metachromatic granules.*
- These granules stain *reddish violet with methylene blue or toluidine blue.*
- These granules are strongly *basophilic.*
- In the granules, there is stored phosphate in the form of linear chains of inorganic phosphate. These granules represent *intracellular phosphate* reserve when nucleic acid syntheis does not occur.
- The phosphate is incorporated into nucleic acid during the synthesis of the latter.
- When nucleic acid synthesis is prevented by starvation , the granules accumulate in the cytoplasm. So, volutin metachromatic granules are most frequent in cells grown under conditions of nutritional deficiency (starvation) and tend to disappear when the deficient nutrients are supplied.
- Volutin metachromatic granules are common in -

i. *Corynebacteria diptheriae*
i. *Gardenella vaginalis*
i. *Agrobacterim tumefaciens*
*. *Mycobacteria*
*. *Spirillum voluants*

## 873. Bifringence polarization microscopy is used for ?

a) Flagella

b) Intracellular structures

c) Capsule

d) Spores

Correct Answer - B
Ans. is `b' i.e., Intracellular structures
Polarization microscope enables the study of intracellular structure using differences in bifringence.

## 874. Thermophile bacteria grow at ?

a) 20°C

b) 20-40° C

c) 40-60°C

d) 60-80°C

Correct Answer - D
**Ans. is 'd' i.e., 60-80° C**
**Temperature requirement of bacteria**

- Bacteria vary in their requirements of temprature for growth.

1. Psychrophilic bacteria grow best at temperature below 20°C
2. Thermophilic bacteria grow best between 55-80°C
3. Mesophilic bacteria grow best between 25-40°C

## 875. Cell wall deficient organisms are

a) Chlamydia

b) Mycoplasma

c) Streptococcus

d) Anaerobes

Correct Answer - B
Ans. is 'b' i.e., Mycoplasma
**Mycoplasma**

- Smallest free living organism, are prokaryotes
- Lack cell wall, are bounded by a triple layered unit membrane that contains sterol (therefore mycoplasmas require sterol for growth).
- Their lack of cell wall is associated with cellular pleomorphism and resistance to cell wall - active antimicrobial agents, such as penicillins and cephalosporins (13 - lactam drugs).
- Multiplication is by binary fission.
- Unique among prokaryotes is the requirment of most mycoplasmas for cholesterol and related sterols.

## 876. Darting motility which occur in V.cholerae, also found in -

a) Shigella

b) Campylobacter jejuni

c) Pneumococcus

d) Bacillus anthrax

Correct Answer - B
Ans. is 'b' i.e., Campylobacter jejuni
Darting (shooting star) motility is seen in

- V. Cholerae
- Gardnerella vaginalis
- *Campylobactor*

## 877. Peritrichous flagellae are seen in ?

a) Vibrio cholerae

b) Proteus

c) Campylobacter

d) Legionella

Correct Answer - B
Ans. is 'b' i.e., Proteus

## 878. True about endotoxin ?

a) Protein

b) Highly antigenic

c) No enzymatic activity

d) Produced by gram positive bacteria

Correct Answer - C
Ans. is 'c' i.e., No enzymatic activity

## 879. Which of the following is an example of heterophile antibody test ?

a) Widal test

b) Weil-Felix reaction

c) Rose-waler test

d) Blood grouping & cross matching

Correct Answer - B

**Ans. is 'b' i.e., Weil-Felix reaction**

**Heterophilic agglutination reaction**

- Some organisms of different class or species share closely related antigens.
- When serum containing agglutinin (antibody) of one organism gives agglutination reaction with antigen of other organism, it is called heterophilic agglutination test.

**Examples are**

- *Streptococcus M.G. agglutination test for primary atypical pneumonia.*
- *Weil - Felix reaction for typhus fever.*
- *Paul Bunnell test for IM1V.*

## 880. Complement components are:

a) Lipids

b) Proteins

c) Lipoproteins

d) Polysaccharide

Correct Answer - B
**Ans. b.** Proteins

## 881. Complement components are ?

a) Lipoproteins

b) Glycoproteins

c) Polysaccharides

d) Lipid

Correct Answer - B
Ans. is 'b' i.e., Glycoproteins
*The proteins and glycoprotiens that constitute the complement system are synthesized by hepatocytes" — Internet*
*"Most of the complement glycoproteins are synthesized predominantly by the liver, but macrophages and many other cell types are also sources of various complement components" - Medical immunology*
*"Complement components are glycoproteins" — Textbook of Human Blood Plasma Protiens*

## 882. $C_1$ esterase inhibitor deficiency causes ?

a) Neisseria infection

b) Hereditary angioneurotic edema

c) Hemolytic disease

d) Hemolytic uremic syndrome

Correct Answer - B
Ans. is 'b' i.e., Hereditary angioneurotic edema
Hereditary angioneurotic edema is due to $C_1$ inhibitor ($C_l$ esterase inhibitor) deficiency.

## 883. Membrane attack complex (MAC) in complement system is:

a) C3b

b) C13

c) C5_9

d) C24

Correct Answer - C
**Ans. c. C5_9**

## 884. Runt disease is ?

a) Graft rejection

b) Graft vs host disease

c) Host vs graft disease

d) Type III hypersensitivity

Correct Answer - B
Ans. is 'b' i.e., Graft vs host disease

## 885. Acquire IgA deficiency may occur in ?

a) Severe Congenital toxoplasmosis

b) Severe Measles infection

c) Severe Brucellosis

d) Severe Leptospirosis

Correct Answer - A

**Severe Congenital toxoplasmosis**

- Block in B cell differentiation due to defective interaction between T and B cells. *Naive B cells are not able to differentiate into IgA - producing cells.*

## 886. Neutrilization test is

a) Widal test

b) Weil-Felix test

c) Paul Bunnel test

d) Nagler reaction

Correct Answer - D
**Ans. is `d' i.e., Nagler reaction**
**Neutralization reaction**

- When antibody reacts with a toxin or other biologically active antigen, it may neutralize the effect of toxin or antigen.
- This ability to used in neutralization test.
- Neutralization tests are of two types

## 887. IgE binds to which cell ?

a) T cells

b) B cells

c) Mast cells

d) NK cells

Correct Answer - C
IgE binds to Mast cells and basophils, and mediate Type I hypersensitivity.

## 888. Which of the following Staphylococcal infection is not toxin mediated:

a) Toxic shock syndrome

b) Scalded skin syndrome

c) Food poisoning

d) Septic shock

Correct Answer - D
Ans. is (d) Septic shock
**Toxin mediated illness of S.**

| Disease | Toxin involved |
|---|---|
| - Toxic shock syndrome | Toxic shock syndrome toxin |
| - Food poisoning | Enterotoxin |
| - Staphylococcal scalded skin syndrome | Exfoliative/epidermolytic toxin |

**Note:** Septic shock is due to bacteremia.

## 889. Which of the following is Amphixenoses ?

a) Anthrax

b) Rabies

c) Trypanosoma cruzi

d) Salmonella

Correct Answer - C
Ans. is 'C' i.e., Trypanosoma cruzi
**Zoonoses**
Zoonoses are diseases and infections which are naturally transmitted between vertebrate animal and man.
**The zoonoses may be classified according to the direction of transmission of disease :**
**1. Anthropozoonoses**

- Infection is transmitted to man from lower vertebrate animals.
- Examples → *Rabies, plague, hydatid disease, anthrax, trichinosis.*

**2. Zoonthroponoses**

- Infection is transmitted from man to lower vertebrate animals
- Examples → *Human tuberculosis in cattle*

**3. Amphixenoses**

- Infection is maintained in both man and lower vertebrate animals that may be transmitted in either direction.
- Examples → T *cruzi, S. japonicum.*

## 890. Which vaccine can cause adverse effects in persons with allergy to egg ?

a) Measles

b) Rubella

c) Rabies

d) Mumps

Correct Answer - C
Ans. is 'c' i.e., Rabies
Duck embryo Vaccine has less neuroparalytic complications, but can cause allergic reactions. Persons allergic to eggs, should not be given this vaccine.
**Rabies Vaccine**

- Rabies vaccines are fluid or dried prepration of fixed virus grown in the neural tissues of rabbits, sheep, goats, mice or rats or in embryonated ducks egg or in cell cultures.
- Inactivation of virus is commonly done by treatment with formalin or 13. Propiolactone (B.P.L.) *o* Antirabies vaccine fall into two main categries.

## 891. Most common Nosocomial infection ?

a) Pneumonia

b) UTI

c) Surgical wound infection

d) Nephritis

Correct Answer - B
Ans. is 'b' i.e., UTI
Most common nosocomial infection → Urinary tract infection.
Most of the nosocomial UTIs occur after urinary *catheterization.*
Second most common nosocomial infection → Pneumonia.
Most of the nosocomial pneumonias are acquire *through respiratory intubation, mechanical ventilation* and suction of the material from mouth.

## 892. Which of the following is not related to epidemiology ?

a) Promotion of health

b) Identification of etiology of disease

c) To collect data of magnitude of health problem

d) To teach a medical student how to conduct safe delivery

Correct Answer - D
Ans. is 'd' i.e., To teach a medical student how to conduct safe delivery
According to the International Epidemiological Association (IEA), epidemiology has three main aims :
a) To describe the distribution and magnitude of health and disease problems in human populations.
b) To identify aetiological factors (risk factors) in the pathogenesis of disease; and
c) To provide the data essential to the planning, implementation and evaluation of services for the prevention, control and treatment of disease and to the setting up of priorities among those services.
In order to fulfil these aims, three rather different classes of epidemiological studies may be mentioned : descriptive studies, analytical studies, and experimental or intervention studies.
The ultimate aim of epidemiology is to lead to effective action :
a) To eliminate or reduce the health problem or its consequences; and
b) To promote the health and well-being of society as a whole.

## 893. India causing maximum death ?

a) Drowning

b) Road traffic accident

c) Burns

d) Poisoning

Correct Answer - B
Ans. is 'b' i.e., Road traffic accident
Among the accidental deaths, maximum deaths are caused by traffic accidents, followed by drowning (2nd m.c. cause) and poisoning (3rd m.c. cause).

## 894. Durkheim work was related to ?

a) Recommendation of multipurpose worker

b) Management in Health manpower

c) Division of labor

d) Integratation of medical and health services

Correct Answer - C

Ans. is 'c' i.e., Division of labor

- **Four major works of Durkheim are *:?***

1. *Division of Labor in society.*
2. Rules of sociological methods.
3. Suicide
4. Elementary forms of religious life.

## 895. Medical audit is done ?

a) To improve patients care

b) For doctor's benefit

c) For hospital staff management

d) For decreasing cost of treatment

Correct Answer - A

**Ans. is 'a' i.e., To improve patients care**

***Medical* audit**

- An objective and systematic way of evaluating the physicians performance is known "MEDICAL AUDIT"
- The Evaluation of the "PROCESS" of medical care is carried out by comparing with a pre-determined standard.
- Medical audit is the professional review of services provided by the hospital against given standard.
- *It is defined as the retrospective evaluation of quality of medical care through the scientific analysis of medical records.*
- Medical audit is an important component of quality assurance, which in turn is an essential part of any management process.

## 896. Clinical audit means ?

a) Measuring hospital records

b) Measuring current patients care against explicit criteria

c) Measuring input-output analysis

d) Measuring shortest time needed to complete task

Correct Answer - B
Ans. is 'b' i.e., Measuring current patients care against explicit criteria
Clinical audit is a quality improving process, in which patients care is improved.
In this, *current patients outcome and outcomes are measured against explicit audit criteria (against reference standards).*

## 897. Disability adjusted life year (DALY) is a measure of ?

a) Life expectancy

b) Effectiveness of treatment

c) Quality of life

d) Human development

Correct Answer - B
**Ans. is 'b' i.e., Effectiveness of treatment**
Disability - adjusted life year (DALY)

DALY is a measure of :-

The burden of disease in a defined population
The effectiveness of interventions

It expresses years lost to premature death and years lived with disability adjusted for the severity of the disability.
That means, DALY measures both mortality and disability together (in contrast to sullivan's index which is related to disability only).
One DALY is one lost year of healthy life.
DALY combines following : -

Years of lost life (YLL).
Years lost to disability (YLD)
DALY = YLL + YLD

Japanese life expectancy statistics are used as a standard for

measuring premature death, as Japanese have the longest life expectancy.

Health - adjusted life expectancy (HALE)

HALE is the indicator used to measure healthy life expectancy.

HALE is based on the life expectancy at birth but includes an adjustment for time spent in poor health.

It is the equivalent number of years in full health that a newborn can expect to live based on current rates of ill health and mortality.

## 898. Human development index includes all except ?

a) Longevity

b) Knowledge

c) Income

d) Literacy rate

Correct Answer - D

**Ans. is 'd' i.e., Literacy rate**

**<u>Human development index</u>**

- HDI is a composite index combining indicators representing three dimensions.

i. *Longevity : Life expectancy at birth.*

i. *Knowledge : Mean years of schooling (gross enrolment ratio) and expected year of schooling.* (In older editions of Park, i.e., 21st/e and older than that, it was *adult literacy rate* instead of expected year schooling).

i. *Income : GNI Per Capita* (In older editions of Park, it was *GDP per capita* instead of GNI per capita).

## 899. Primordial prevention is done to prevent development of ?

a) Disease

b) Risk factors

c) Impairment

d) Disability

Correct Answer - B

**Ans. is 'b' i.e., Risk factors**

**LEVELS OF PREVENTION**

- There are four levels of prevention :?

1. Primordial prevention
2. Primary prevention
3. Secondary prevention
4. Tertiary prevention

Primordial Level of Prevention: Is primary prevention (see below) in purest sense

- *It is* the *prevention of the emergence or development of risk factors* in countries or population groups in which they have not yet appeared
- Modes of Intervention:

1. *Individual Education*
2. *Mass Education*

- *Primordial Level is Best level of prevention for Non-communicable diseases*

## 900. Screening is a type of ?

a) Primordial prevention

b) Secondary prevention

c) Primary prevention

d) Tertiary prevention

Correct Answer - B
Ans. is 'b i.e., Secondary prevention
In secondary prevention, action halts the progress of a disease at its incipient stage and prevents complication.
*Screening tests (e.g. - Pap smear),* helps in diagnosis at early stage so that adequate treatment can halt disease progression and prevent complication.

**901.**

## Lack of ability of a part to do normal function is called as ?

a) Impairment

b) Disease

c) Disability

d) Handicap

Correct Answer - C
Ans. is 'c' i.e., Disability
According to WHO definitions,
*Disease:* Any abnormal condition of an individual that impairs function
*Impairment:* Any loss or abnormality of psychological, physiological or anatomical structure or function
*Disability:* (Because of impairment,) any restriction or inability to perform an activity in a range considered normal for a human being

## 902. Quarantine period of cholera ?

a) 1 day

b) 2 days

c) 5 days

d) 10 days

Correct Answer - C
Ans. is 'c' i.e., 5 days

## 903. Not true about Alma-Ata declaration ?

a) Was held in 1978

b) Community participation

c) Health for all

d) Best approach for health for all is basic health care

Correct Answer - D
Ans. is 'd' i.e., Best approach for health for al is basic health care
The Declaration of Alma-Ata (1978) by emphasizing the need for *"individual and community participation"* gave a new meaning and direction to the practice of health education.
In 1978, the Alma-Ata International conference on Primary Health Care reaffirmed Health for All as the major social goal fo governments, and stated that the best approach to achieve the goal of HFA is by providing primary health care, especially to the vast majority of underserved rural people and urban poor.
It was envisaged that by the year 2000, at least essential health care should be accessible to all individuals and families in an acceptable and affordable way, with their full participation.
The Alma-Ata Conference called on all governments to formulate national policies, strategies and plans of action to launch and sustain primary health care as part of a national health system.
It is left to each country to develop its norms and indicators for providing primary health care according to its own circumstances.

**904. In a child who is allergic to egg, which vaccine should be avoided ?**

a) Measles

b) MMR

c) Influenza

d) DPT

Correct Answer - C
Ans. is 'c' i.e., Influenza

## 905. Active and passive immunity should be given together in all except -

a) Tetanus

b) Rabies

c) Measles

d) Hepatitis B

Correct Answer - C
Ans. is `c' i.e., Measles
First see the difference between active and passive immunity.
**Active immunity**
o Active immunity develops because of *active participation* of immuniological system of the host.
o That means, after antigenic stimulation, the host develops antibodies or cellular immune response against that antigen due to activation of self B and/or cells.
o Antigenic stimulation may be : ?
i) Clinical infection
ii) Subclinical infection
iii) Vaccination (live attenuated vaccine or killed vaccine or toxoid).
**Passive immunity**
o The host's immune system does not take active participation but depends on ready-made antibodies or T cells to be transferred to it.
o Examples :
i) Administeration of immunoglobulin or antiserum
ii) Transplancental transfer of antibodies from mother to fetus.
iii) Administration of lymphocytes.
Coming back to question
o In some diseases passive immunization is often undertaken in

conjunction with inactivated vaccine products, to provide both : ?
i) Immediate (but temporary) passive immunity.
ii) Slowly developing long lasting active immunity.
o The disease in which simultaneous active and passive immunization are used : *?*
*i) Tetanus* iii) *Diphtheria*
*ii) Rabies* iv) *Hepatitis B*
o In measles also, both active and passive immunization are used, but not simultaneously. Because the antibody response to live attenuated measles vaccine is diminished in persons who receive immunoglobulin can currently. o So, the person passively immunized should be given live measles vaccine 8-12 weeks later.
So, both active and passive immunity are used : ?
i) Simultaneously —> Tetanus, rabies, Diphtheria, Hepatitis B.
At different time —> Measles.

## 906. Post exposure prophylaxis is given in all except ?

a) Rabies

b) Chickenpox

c) Measles

d) Typhoid

Correct Answer - D
**Ans. is 'd' i.e., Typhoid**
**<u>Post-exposure immunization</u>**
Post exposure immunization is prophylactic immunization immediately after exposure to a pathogen, in order to prevent infection by the pathogen and the development of disease.
**Post exposure immunization is given for -**

i. *Varicella (chicken pox)*
i. *Measles*
i. *Rabies*
*. *Tetanus*
*. *Hepatitis*
i. *Meningococcal meningitis*

## 907. Isolation is not done in ?

a) Cholera

b) Diphtheria

c) Mumps

d) Hepatitis

Correct Answer - C:D

**Ans. is (D) Hepatitis (C) Mumps**

Isolation has a distinctive value in the control of some infectious diseases, e.g., diphtheria, cholera, streptococcal respiratory disease, pneumonic plague.

In some diseaes where there is a large component of subclinical infection and carrier state, even the most rigid isolation will not prevent the spread of disease, e.g., polio, hepatitis and typhoid fever.

Mumps is highly infectious before it is diagnosed hence isolation for most cases of mumps has proved futile - Park.

Measles is also highly infectious during prodromal period, isolation is most useful if diagnosis can be established in the prodromal/catarrhal stage. But most cases of measles are diagnosed with the appearance of rash when communicability begins to decline. Isolation in measles is therefore not likely to be very effective.

## 908. Notifiable diseases to WHO are all except ?

a) Cholera

b) Plague

c) Yellow fever

d) Tuberculosis

Correct Answer - D
Ans. is 'd' i.e., Tuberculosis

## 909. Vaccine which should not be frozen -

a) OPV

b) Measles

c) HBV

d) Yellow fever

Correct Answer - C
Ans. is 'c' i.e., HBV
*OPV and measles vaccines are stored in deep freezers.* (Note : Yellow fever vaccine is also freez dried, but is not used in India).
Vaccine which must be stored in the cold part but never allowed to freez.

- Typhoid
- DPT
- TT
- Hepatitis B
- DT
- BCG
- Diluents

## 910. Not true about vaccines ?

a) Two live vaccines can be given at same time at different sites

b) Two live vaccines at same site should be given at least 3 weeks apart

c) In vaccine vial monitor if the color of inner square is same as outer background, vaccine is good for use

d) Live and killed vaccines can be given together

Correct Answer - C

**Ans. is 'c' i.e., In vaccine vial monitor if the color of inner square is same as outer background, vaccine is good for use**

**<u>Vaccine Vial monitor</u>**

- An important improvement in PPI during 1998 has been the use of *vaccine vial monitor.*
- Colour monitors or labels are put on vaccine bottles.
- Each label has a circle of deep blue colour.
- Inside it is a white square which changes colour and gradually becomes blue, if vaccine bottle *is* exposed to higher temprature.
- When the colour of the white square becomes blue like that of surrounding circle, the vaccine should be considered ineffective.
- Thereby, the health worker can easily ascertain that the vaccine being given is effective or not.

## 911. Which of the following is not a killed vaccine ?

a) Polio

b) HBV

c) HAV

d) Yellow fever vaccine

Correct Answer - D
Ans. is 'd' i.e., Yellow fever vaccine
Yellow fever vaccine is a killed vaccine.

## 912. Hepatitis A vaccine available ?

a) Live attenuated

b) Killed (Inactivated)

c) Both live and inactivated

d) Subunit vaccine

Correct Answer - C
**Ans. is 'c' i.e., Both live and inactivated**
**Two types of hepatitis A vaccines are used :-**
1. *Formaldehyde inactivated vaccine*
2. *Live attenuated vaccine*

## 913. True about carriers ?

a) Infection with clinical symptoms

b) Serves as source of infection

c) More infectious than cases

d) Less dangerous than cases

Correct Answer - B
Ans. is 'b' i.e., Serves as source of infection
A carrier is defined as *"an infected person or animal that harbours a specific infectious agent in the absence of clinical disease and serves as a potential source of infection".*
As a rule carriers are less infectious than cases, but epidemiologically they are more dangerous than cases because they escape recognition, and continuing as they do to live a normal life among the population or comunity, they readily infect the susceptible individuals over a wider area and longer period of time.

## 914. Healthy carrier are not seen in

a) Salmonella

b) Diphtheria

c) Measles

d) Cholera

Correct Answer - C
Ans. is 'c' i.e., Measles
The infectious agent is shed by the infected host as it multiplies in them but the host does not manifest signs of the disease.
Subclinical infection does not occur in measles

## 915. Interval between primary and secondary cases ?

a) Latent period

b) Communicable period

c) Serial interval

d) Generation time

Correct Answer - C

**Ans. is 'c' i.e., Serial interval**

Latent period, serial interval and generation time, all are approximate measure of incubation period, i.e., these period can give some idea about incubation period.

**Latent period**

- *The period from disease initiation to disease detection.*
- It is used in non-infectious disease as the equivalent of incubation period in infectious disease.

**Serial interval**

- *The gap time between onset of primary case and secondary case.*
- By collecting information about a whole series of such onset, we get a distribution of secondary cases from which we can guess the incubation period.

**Generation time**

- *Interval between receipt of infecton by host and maximal infectivity of the host.*
- Generation time is roughly equal to the incubation period.

**About option 'b'**

**Communicable period**

- *The time during which an infectious agent may be transferred directly or indirectly from an infected person to another person.*

- The period of communicability has no relation with incubation period, it merely reflects the duration when the infectious agent may be transferred. This may occur during incubation period, during actual illness or during convalsescence.
- Generally communicable diseaes are not communicable in incubation period except - measles, Chicken pox, Pertussis hepatitis A, i.e., these diseases are communicable during their late incubation period.

## 916. Transmission of microfilaria in mosquito is ?

a) Cyclo-developmental

b) Cyclo-propagative

c) Propagative

d) Cyclical

Correct Answer - A

**Ans. is 'a' i.e., Cyclodevelopmental**

In vector born diseases, an arthropod or any living carrier (e.g., snail) acts as a vector and transports an infectious agent to a susceptible individual.

- Transmission by a vector may be of following types : ?

**A. Mechanical transmission**

- The infectious agent is mechanically transported by vector, e.g., through souling of feet of flying arthropod.
- There is no development or multiplication of infectious agent within the vector.

**B. Biological transmission**

- The infectious agent undergoes replication (change in number) or development (change in form) or both in vector.
- So, inectious agent requires an incubation period *(extrinsic incubation period)* before vector can transmit it to host.
- This type of transmission is of three types : -

***i) Propagative***

- Agent undergoes multiplication (change in number) in the vector.
- There is no development → No change in form.
- Example → *Plague bacilli in rate fleas.*

***ii) Cyclo-developmental***

- Agent undergoes only development → Change in form.
- No multiplication → No change in number.
- Example → *Micorfilaria in mosquito.*

***iii) Cyclo-propagative***

- Agent undergoes both development and multiplication → Change in form and number.
- Example → *Malaria parasite (plasmodium sp.) in mosquito.*

## 917. Multifactorial causation of disease theory was proposed by

a) Louis Pasteur

b) Pettenkofer

c) Robert koch

d) Aristotle

Correct Answer - B
Ans. is 'b' i.e., Pettenkofer
Multifactorial causation of disease theory was proposed by Pettenkofer.

## 918. Continuous scrutiny of health related factors is called ?

a) Isolation

b) Surveillancec

c) Monitoring

d) Quarntine

Correct Answer - B

**Ans. is 'b' i.e., Surveillance**

**Monitoring**

- Monitoring is *the performance and analysis of routine measurements aimed at detecting changes in the environment or health status of population,* e.g. monitoring of air pollution, water quality, and growth & nutritional status. Surveillance
- *Surveillance is the continuous scrutiny of the factors that determine the occurrence and distribution of disease and other conditions of ill health.*
- In simple words *"surveillance is systemic ongoing collection, collation and analysis of data and the timely dissemination of information to those who need to know so that action can be taken".*
- According to above definition, monitoring becomes one specific and essential part of the broader concept embraced by surveillance.
- Following example will help to differentiate these two ?

**In tobacco control -**

- *Surveillance* includes collection of data about prevalence of tobacco use, its health and enconomic consequences, its socio-cultural determinats and tobacco control policy responses and tobacco industry activities. By collecting all these information effective tobacco control interventions can be taken.

- *Monitoring* will continously oversight the activities of this tobacco control interventions, to ensure that they are proceeding according to plan. It keeps track of achievement, resources supply and utilization, staff movement, etc, so that if anything goes wrong, immediate corrective measure can be taken.

So,

1. In surveillance, data is collected & collated, and this information is used to know what action to be taken - making a plan of action.
2. Monitoring than keep a watch that this plan of action is working properly It is a part of continued surveillance.

*"Surveillance is a systemic method for continuous monitoring of disease in a population, in order to be able to detect changes in disease patterns and then to control them".* Epidemiology glossary

## 919. Association of Two variables explained by 3rd variable is ?

a) Spurious association

b) Indirect association

c) Direct association

d) Causal association

Correct Answer - B

**Ans. is 'b' i.e., Indirect association**

**<u>Association</u>**

- Descriptive studies help to suggest an aetiological hypothesis.
- Analytic and experimental studies test the hypothesis, derived from descriptive studies and confirm or refute the observed association between suspected causes and disease.
- Association may be defined as the *concurrence of two variables more often than would be expected by chance.*
- In other words, *events are said to be associated when they occur more frequently togeher than one would expect by chance.*

**Association can be of following types : -**

1 .Spurious association

- Observed association between a disease and suspected factor is spurious, i.e., not real.
- In other words there is an observed association when none actually exists.

2.Indirect association

- The indirect association is a statistical association between a variable of interest and a disease due to the presence of another factor, known or unknown, that is common to both the variable and

the disease.

- This third factor (i.e., the common factor) is also known as the confounding variable.
- For example, endemic goitre (disease) is found at high altitudes (variable), showing thereby an association between altitude and endemic goitre. But it is due to iodine deficiency which is common at high altitude. So, iodine deficiency acts as a confounding factor as it is associated with both high altitude and endemic goitre.

3.Direct (causal) association

a) *One to one causal relationship*

- Two variables are stated to be causally related if change in one is followed by change in other.
- If It does not, then their relationship cannot be causal.

b) *Multifactorial causation*

- The causal thinking is different in non-communicable disease (e.g., CHD) where the etiology *is* multifactorial, i.e., more than one factors are associated with disease causation.

## 920. Missing cases are detected by ?

a) Active surveillance

b) Passive surveillance

c) Sentinel surveillance

d) Prevalence rate

Correct Answer - C

**Ans. is 'c' i.e., Sentinel surveillance**

**<u>Surveillance</u>**

- Surveillance is defined as *"the continous scrutiny of the factors that determine the occurrence and distribution of disease and other conditions of ill health".*
- Surveillance may be of following types :?

1) Passive surveillance

- Data is reported itself to health system, e.g. a patient (clinical case) is coming to a doctor.
- Most of the national health programmes in India rely on passive surveillance for data collection.

2) Active surveillance

- Data is collected actively by health system, e.g. collection of blood slides every fortnight from house to house to control malaria.
- Active surveillance in India is done in :-

1. *National leprosy elimination programme (modified leprosy elimination campaigns).*
2. *National vector Borne disease control programme (VVBDCP) e.g. malaria.*

3) Sentinel surveillance

- Sentinel surveillance helps in *identifying missing cases and supplementing notified cases.*

2. Sentinel surveillance in India is done in *national AIDS control programme.*

## 921. First step in epidemic done by an epidemiologist?

a) Identity the cases

b) Confirm the diagnosis

c) Identify the prone people

d) Identify the causative factors

Correct Answer - B

**Ans. is 'b' i.e., Confirmation of diagnosis**

**Steps for Investigation of Epidemic :**

- *Verification of diagnosis :*
- Is the *first step in investigation of an epidemic'*
- *Confirmation of existence of an epidemic:*
- Compare with disease frequencies during same period in previous years
- *Epidemic threshold:* An arbitrary limit of *'2 standard errors from the endemic occurrence'*

***Defining the population at risk:***

- Obtaining the map of the area
- Calculation of *'appropriate denominator of population at risk'*

***Rapid search for all cases and their characteristics:***

- Medical survey
- Epidemiological case sheet
- Searching for more cases: Search for new cases is carried out everyday, till the area is declared free of epidemic; this period is usually taken as *'twice the incubation period of the disease since the occurrence of last case'*

***Data analysis:***

- *Formulation of hypothesis*

- *Testing of hypothesis*
- *Evaluation of ecological factors*
- *Further investigation of population at risk*
- *Writing the report*

## 922. Proportional mortality rate is ?

a) Number of death due to a particular cause

b) Number of death during that year

c) Number of death in one month

d) None

Correct Answer - A

**Ans. is 'a' i.e., Number of death due to a particular cause**

**<u>Proportional mortality rate (ratio)</u>**

- Proportional mortality rate measures the proportion of total death due to specific cause or proportion of deaths in a particular age group.
- It is defined as *"number of deaths due to a particular cause (or in specific age group) per 100 total deaths".*
- It is the *'simplest measure of estimating the burden of disears'* in the community.
- It is a useful *'health Status indicator';* indicates magnitude of preventable mortality.
- It is used when population data is not available.
- It does not indicate the risk of members of population contracting or dying from the disease.

## 923. Best indicator for burden of disease ?

a) Incidence

b) Crude death rate

c) Cause specific death rate

d) Proportional mortality rate

Correct Answer - D
Ans. is 'd' i.e., Proportional mortality rate

## 924. Case fatality rate is a ?

a) Rate

b) Ratio

c) Proportion

d) None

Correct Answer - C
Ans. is 'c' i.e., Proportion

## 925. Natural history of disease is studied with ?

a) Longitudinal studies

b) Cross-sectional studies

c) Both

d) None

Correct Answer - A

**Ans. is 'a' i.e., Longitudinal studies**

**<u>Longitudinal studies</u>**

- In this type of study, observations are repeated in the same population over a prolonged period using *follow up examinations.*
- *They are useful to*

1. *Study the natural history of the disease*
2. *For identifying risk factors of disease*
3. *For finding out the incidence rate or rate of recurrence of new cases of the disease.*

**Note:** Longitudinal studies are difficult to organize and more time consuming than cross-sectional studies.

## 926. Incidence is calculated by ?

a) Cross sectional study

b) Cohort study

c) Case control study

d) None

Correct Answer - B
Ans. is 'b' i.e., Cohort study

## 927. Case control study is an example of ?

a) Prospective study

b) Retrospective study

c) Combined retrospective and prospective study

d) Study at one point of time

Correct Answer - B
Ans. is 'b' i.e., Retrospective study

## 928. Example of case control study (risk factor and disease/outcome) ?

a) Maternal smoking and congenital malformation

b) Vaginal adenocarcinoma and intrauterine exposure to DES

c) Thalidomide exposure and teratogenicity

d) All of the above

Correct Answer - D

**Ans. is `d' i.e., All of the above**

**Important risk factors and their outcomes/diseases which have been studied by case-control study are :-**

i. Cigarette smoking and lung cancer.
i. *Maternal smoking and congenital malformation.*
i. Radiation and leukemia.
v. OCP used and hepatocellular carcinoma.
v. Herpes-simplex and Bells palsy.
i. Artificial sweeteners and bladder cancer.
i. *DES exposure in fetal life and vaginal adenocarcinoma.*
i. OCP use and thromboembolic disease.
s. *Thalidomide use in pregnancy and teratogenicity.*

## 929. Study suitable for rare diseases ?

a) Cohort study

b) Case-control study

c) Both of the above

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Case-control study

## 930. Best epidemiological study is -

a) RCT

b) Meta-analysis

c) Cohort study

d) Case-control study

Correct Answer - B
Ans. is 'b' i.e., Meta-analysis
Here are the different epidemiological studies with decreasing order of accuracy to test the association between risk factor and disease :?

1. Systematic review and meta-analysis → Overall most reliable
2. Randomized controlled trials (controlled clinical trails) → Most reliable individual study.
3. Retrospective (Non-concurrent/historic) Cohort study.
4. Prospective (concurrent) Cohort study.
5. Case control study
6. Cross-sectional study
7. Ecological study

## 931. Matching is not required in which epidemiological study?

a) Case control study

b) Cohort study

c) Case report

d) Randomized control trial

Correct Answer - C
**Ans. is `c' i.e., Case report**
**Case report:**
In medicine, a case report is a detailed report of the symptoms, signs, diagnosis, treatment, and follow-up of an individual patient. Case reports may contain a demographic profile of the patient, but usually describe an unusual or novel occurrence. Since it involves information on single case it does not require matching.
Others i. e. case control study, cohort study and randomized control trials are based on the comparative study of two groups.
To decrease the bias in the observations in the two groups under consideration it is essential that the groups be matched for all the characteristics except for the one under study. Thus matching is essential in these epidemiological studies.

**932. Randomized study is done in people who are volunteer for the study. Which type of bias may occur ?**

a) Hawthorne bias

b) Berkesonian bias

c) Selection bias

d) Attention bias

Correct Answer - C
Ans. is 'c' i.e., Selection bias

## 933. Not true about propagated epidemics ?

a) Gradual rise

b) Gradual fall

c) Person to person transmission

d) No secondary wave

Correct Answer - D
Ans. is 'd' i.e., No secondary wave

**934. Total number of TB cases in a community of 6000 population 150. Number death due to TB are 30. What is the TB specific death rate (per 1000 population) ?**

a) 20

b) 10

c) 5

d) 0-5

Correct Answer - D
**Ans. is 'd' i.e., 0-5**
**Specific death rates**
When analysis is planned to throw light on etiology, it is essential to use specific death rates.
The specified death rate helps identify particular 'at risk' group *(s)* for prevention.
It also permits comparison between different causes within same population.
The specific death rates may be ?
a) Cause or disease specific, e.g. TB, cancer, accident.
b) Related to specific groups - e.g. age specific, sex specific.

## 935. An infectious disease shows iceberg phenomenon. That means it has ?

a) More case fatality rate

b) More SAR

c) More subclinical cases

d) More complications

Correct Answer - C

**Ans. is 'C' i.e., More subclinical cases**

**Iceberg of disease**

Disease in a community may be compared with an iceberg.

The floating tip of the iceberg represents what the physician sees in the community, i.e. clinical cases (Diagnosed case, symptomatic case of the clinically apparent case).

The vast submerged portion of the iceberg represents the hidden mass of disease, i.e. latent, inapparent, presymptomatic and undiagnosed cases and carriers in the community.

- The "waterline" represents the demarcation between apparent and inapparent disease.
- An epidemiologist is concerned with the hidden portion of the iceberg whereas the clinician is concerned with the tip of the iceberg.
- Screening is done for a Hidden portion of the iceberg whereas diagnosis is done for the tip of the iceberg.

The iceberg phenomenon of disease is not shown by Rabies, Tetanus, Rubella, and Measles.

The clinician concerned only with the tip of iceberg, i.e symptomatic cases that are seen in clinical treatment, this can result in inaccurate view of the nature and causes of a disease results because the

minority of the cases are studied (hidden cases:- submerged portion of iceberg is not studied) → Clinician's Fallacy

**Diseases with a great deal of subclinical infection (therefore have iceberg phenomenon) are :**

1. Polio
2. Japanese encephalitis
3. Influenza
4. Mumps
5. Hepatitis A and B
6. Diphtheria

## 936. Relationship between positive predictive value and prevalence ?

a) PPV α Prevalence

b) PPV α 1/Prevalence

c) PPV x Prevalence = 1

d) PPV = 1/Prevalence

Correct Answer - A

**Ans. is 'a' i.e., PPV α Prevalence**

**Prevalence affects the PPV the most. PPV is directly proportional to the prevalence of the disease in the population. However, both sensitivity and specificity can change the predictive value.**

**The prevalence of a disease in a population is high, the more accurate will be the positive predictive value of a screening test. If the prevalence declines, the PPV will be low.**

**NPV varies inversely with the prevalence**

## 937. Screening is not recommended if ?

a) Prevalence of disease is high

b) Life expectancy can be prolonged by early diagnosis

c) Diagnostic test should be available

d) Diseases with no latent period

Correct Answer - D

**Ans. is 'd' i.e., Disease with no latent period**

**The disease to be screened should fulfil the following criteria before it is considered suitable for screening:?**

1. The condition sougth should be an important health problem (in general, prevalence should be high).
2. There should be a recognizable latent or early asymptomatic stage.
3. The natural history of the contition, including development from latent to declared disease, should be adequately understood (so that we can know at what stage the process ceases to be reversible).
4. There is a test that can detect the disease prior to the onset of signs and symptoms.
5. Facilities should be available for confirmation of the diagnosis.
6. There is an effective treatment.
7. There should be an agreed-on policy concerning whom to treat as patients (e.g., lower ranges of blood pressure; border-line diabetes).
8. There is good evidence that early detection and treatment reduces morbidity and mortality.
9. The expected benefits (e.g., the number of lives saved) of early detection exceed the risks and costs.

## 938. The validity of a test denotes ?

a) Precision

b) Accuracy

c) Reproducibility

d) Reliability

Correct Answer - B

**Ans. is 'b' i.e., Accuracy**

**Screening test to be applied**

The screening test to be applied should fulfill the following important criteria before it is considered suitable for screening : -

*1.Acceptability*

- The test should be acceptable to the people at whom it is aimed.
- In general painful or embarrassing tests e.g., per rectal or vaginal examination are not likely to be acceptable.

2.Repeatability *(reliability)*

- Repeatability means the test must give consistent results when it is repeated more than once on the same individual under the same conditions.
- That means the results of the test are precise (exact), So repeatability is sometimes called precision, reliability or reproducibility.

3. *Validity (accuracy)*

- Validity refers to what extent the test accurately measures which is purports to measures.
- That means a valid test distinguish the people who have the disease from those who do not.
- Validity has components --> *Sensitivity and specificity.*

## 939. Positive predictive value is a function of sensitivity,specificity and

a) Absolute risk

b) Relative risk

c) Incidence

d) Prevalence

Correct Answer - D
Ans. d. Prevalence
The predictive value of a positive result falls as the disease prevalence declines.
**Positive Predictive Value**

- In addition to sensitivity and specificity, the performance of a screening test is measured by its 'predictive value', which reflects the diagnostic power of the test.
- The predictive accuracy depends upon sensitivity, specificity and disease prevalence.
- The predictive value of a positive test indicates the probability that a patient with a positive test result, has, in fact, the disease in questions.
- The more prevalent a disease in the given population, the more accurate will be the predictive value of a positive screening test.
- The predictive value of a positive result falls as the disease prevalence declines

## 940. Numerator in negative predictive value ?

a) True positive

b) False positive

c) True negative

d) False negative

Correct Answer - C
Ans. is 'c' i.e., True negative
specificity = True negatives/True negatives+False positives
Sensitivity=True Positives/True positives+False negatives
Positive predictive value = True positives/(true+false) positives
Negative predictive value = True negatives/(true+false) negatives

## 941. Formula to calculate sensitivity of a screening test ?

a) True positive/true positive + false negative

b) True negative/true positive + false negative

c) True positive/true negative + false positive

d) True negative/true negative + false positive

Correct Answer - A
Ans. is 'a' i.e., True positive/true positive + false negative
The **formula** for the positive likelihood ratio (''LR+'') considers both **sensitivity** and specificity: it's **sensitivity** divided by (1-specificity), or the true positive rate divided by the false positives. This shows how much more likely is a person with the disease to score positive than a person without the disease.

## 942. Positive mortality indicator is ?

a) IMR

b) Child mortality rate

c) MMR

d) Life expectancy

Correct Answer - D

**Ans. is 'd' i.e., Life expectancy**

**<u>Mortality indicators</u>**

**These are :?**

i. Crude death rate
i. Maternal mortality rate
i. Expectation of life (life expectancy)
v. Disease specific mortality rate
v. Infant mortality rate
i. Age specific death rate
i. Child mortality rate
i. Adult mortality rate
x. Under-5 proportional mortality rate
x. Years of potential life lost

- Among these only *life expectancy is a positive mortality indicator,* i.e. increase life expectancy means improvement in health.
- All other are 'negative' health indicators, i.e. increase value of these indicators implies poor health of community.

## 943. What is the route of administration of avian influenza vaccine?

a) Intranasal

b) Intramuscular

c) Subcutaneous

d) Intradermal

Correct Answer - B

**Ans. is 'b' i.e., Intramuscular**

**Vaccine Avian Influenza:**

- On April 17, 2007, FDA licensed the first vaccine in the United States for the prevention of H5N1 influenza, commonly referred to as avian influenza or "bird flu".
- This inactivated influenza virus vaccine is for use in people 18 through 64 years of age who are at increased risk of exposure to the H5N 1 influenza virus subtype contained in the vaccine.
- This vaccine is derived from the A/Vietnam/1203/2004 influenza virus.
- It is administered as a two-dose regimen. One 90 microgram dose is given intramuscularly, in the upper arm, and a second 90 microgram dose is given in the same manner, 28 days later.

## 944. Mortality rate in measles encephalitis is -

a) 1-2%

b) 10-20%

c) 20-30%

d) 30-40%

Correct Answer - B
Ans. is 'b i.e., 10-20%
*"The mortality rate in encephalitis associated with measles is about 10-20 %" — Park*
*"Case fatality rate in acute measles encephalitis is 15%" wwwcdc.gov.*

## 945. Mortality rate of measles in developing countries?

a) 10%

b) 20%

c) 30%

d) 40%

Correct Answer - A
Ans. is 'a' i.e., 10%
Measles-associated mortality is usually higher among the very young and very old.
Mortality in developing countries may be *as high as 10 to 15%* due to one or several factors, including the early age of infection, malnutrition, diarrhea, concomitant/secondary bacterial infections, and lack of access to good medical care.
*Most common cause of death is pneumonia in children and encephalitis in adults.*

## 946. Measles elimination criteria are all except ?

a) Absence of endemic measles

b) For more than 12 months

c) Incidence < 1 per 1 lac population

d) Transmission at low level

Correct Answer - D

**Ans. is 'd' i.e., Transmission at low level**

- *WHO defines elimination of measles as the absence of endemic measles for a period of 12 months in the presence of adequate surveillance.*
- *One indicater of measles elimination is a sustained measles incidence < 1/100, 000 population.*
- *In 2005, the World Health Assembly set a goal of achieving a 90% reduction in global measles mortality by 2010 as compared with level in 2000.*

## 947. True about measles are all except ?

a) Koplik's spots is pathognomonic

b) Source is a case

c) Infectivity is low

d) Affect age group 1 to 3 years

Correct Answer - C
Ans. is 'c' i.e., Infectivity is low
Measles has high infectivity with secondary attack rate of 80%.
Other options are correct.

## 948. Koplik spot is pathognomic of which infection ?

a) Rubella

b) Influenza

c) Mumps

d) Measles

Correct Answer - D
Ans. is 'd' i.e., Measles

## 949. Most rapid diagnosis of pulmonary TB can be done by ?

a) Sputum culture

b) Sputum microscopy

c) Radiometric BACTEC method

d) Genexpert

Correct Answer - B

Ans. is 'b' i.e., Sputum microscopy

- *Sputum smear microscopy is the quickest and easiest procedure.* But it lacks both sensitivity and specificity.
- Sputum culture is sensitive and most specific. But it takes 2-8 weeks for culture on routine L.J. media (solid medium).
- M tuberculosis produces visible colonies on solid media (L.J. media) in 4-8 weeks.
- Studies have shown that the rate of Isolation of positive cultures was significantly faster with the Bactec method with 87% of the positives being obtained at 7 days and 96% by 14 days.
- Gene XPert should be used as the initial diagnostic test in individuals suspected of having MDR-TB or HIV-associated TB (strong recommendation)," and "Xpert may be used as a follow-on test to microscopy where MDR and/or HIV are of lesser concern, especially in smear-negative specimens (conditional recommendation).
- The GeneXpert MTB/RIF assay is a novel integrated diagnostic device for the diagnosis of tuberculosis and rapid detection of RIF resistance in clinical specimens.

## 950. All are true about DOTS, except ?

a) Short course of chemotherapy

b) Drugs are given free of cost

c) Supervised drugs intake in intensive phase

d) Daily treatment is recommended

Correct Answer - D

**Ans. is 'd' i.e., Daily treatment is recommended**

**<u>Directly observed treatment short course (DOTS)</u>**

- In the Revised National Tuberculosis Control Programme (RNTCP), patients are provided short course chemotherapy as *DOTS.*
- All patients are provided short-course chemotherapy *free of charge.*
- During the *intensive phase* of treatment *a health worker watches* as the patient swallows the drug in his presence. o During *continuation phase,* the patient is issued medicine *for one week* in a multiblister combipack of which the first dose is swallowed by the patient in the presence of health worker.
- The consumption of medicine in the continuation phase is also checked by return of empty multiblister combipack when the patient comes to collect medicine for the next week.
- In this programme, *alternate day treatment* is given.
- Under RNTCP, active case finding is no longer pursued. Case finding is passive. Patients presenting themselves with symptoms suspicious of tuberculosis are treated with DOTS therapy.
- The colour of boxes (containing the drugs for full course of treatment) is according to the category of regimen?

i. Category I patients → Red
i. Category II patients → Blue
i. Category III patients → Green

## 951. As per RNTCP guidelines first do in TB suspect case ?

a) Chest X-ray

b) Sputum culture

c) Sputum microscopy

d) Start short-course chemotherapy

Correct Answer - C

**Ans. is 'c' i.e., Sputum microscopy**

**<u>Treatment stratgics in RNTCP</u>**

- *Under the RNTCP active case finding is not prusued.*
- *Case finding is passive.*
- Patients presenting thremselves with symptoms suspicious of tuberculosis are screened *through 2 sputum smear examination.*
- Sputum microscopic examination is done in designated RNTCP microscopy centres.
- *It is essential to examine 2 sputum specimens of each patient before a conclusive diagnosis can be made.*
- If only 1 sputum smear is positive, chest x-ray helps in diagnosis.
- Once the diagnosis is confirmed, treatment is started according to DOTS (Directly observed therapy short term).
- Patient are expected to *collect drugs once a month* (not daily) on fixed dates from the nearest treatment centre.

## 952. STOP TB Strategy was lauched in ?

a) 2002

b) 2006

c) 2010

d) 2013

Correct Answer - B

**Ans. is 'b' i.e., 2006**

**STOP TB Strategy**

- In 2006, WHO launched the new Stop TB Strategy.
- The core of this strategy is DOTS.
- The strategy is to be implemented over the next 10 years as described in the Global Plan to Stop TB 2006-2015.
- The targets and indicators for TB control are as defined within the framework of MDGs.
- These will be used to measure the progress made under the stop TB strategy.
- It focuses onthe five principal indicators that are used to measure the implementation and impact of TB control.
- They are : case detection, treatment success, incidence, prevalence and deaths.
- The global targets for case detection and treatment success have been set by WHO's World Health Assembly.

i. By 2015: The global burden of TB (prevalence and death rates) will be reduced by 50% relative to 1990 levels. This means reducing prevalence to 150 per 100,000 or lower and deaths to 15 per 100,000 per year or lower by 2015 (including TB cases coinfected with HIV). The number of people dying from TB in 2015 should be less than approximately 1 million, including those coinfected with

HIV.

i. By 2050 : The global incidence of TB disease will be less than or equal to 1 case per million population per year.

## 953. According to DOTS-PLUS guidelines 2013 treatment of multidrug resistance TB includes all except ?

a) Total duration 24-27 months

b) Intensive phase - 6 drugs

c) Continutation phase - 2 drugs

d) Intensive phase 6-9 months

Correct Answer - C

**Ans. is 'c' i.e., Continutation phase-2 drgus**

**Treatment of multidrug resistance (MDR) TB**

- MDR-TB is defined as resistance to at least both INH and rifampicin. Previously it was classified as Category IV under DOTS (DOTS-PLUS).
- The treatment is given in two phases, the intestive phase (IP) and the continuation phase (CP). *The total duration of treatment for regimen for MDR-TB is 24-27 months,* depending on the IP duration.

o Treatment regimen comprises :-

i. Intensive phase (6-9 months) : *Six drugs :* Kanamycin (Km), levofloxacin (Lvx), ethionamide (Eto), pyrazinamide (Z), ethambutol (E), and cycloserine (Cs).

i. Continuation phase (18 months) : *Four drugs :* Levofloxaxcin, ethionamide, ethambutol and cycloserine.

i. Total duration of treatment is 24-27 months.

**Treatment of extensive drug resistance (XDR) TB**

- XDR-TB is defined as *resistance to any fluoroquinolone* and *at least one of the following three second-line drugs (capreomycin, kanamycin, amikacin),* in addition to multidrug resistance.

- The Regimen for XDR-TB would be of 24-30 months duration, with 6-12 months Intensive Phase (IP) and 18 months Continuation Phase (CP).
- Regimen is :-

i. Intensive phase (6-12 months) : *Seven drugs :* Capreomycin, PAS, moxifloxacin, high dose INH, clofazimine, Linezolid, amoxyclay.
i. Continuation phase (18 months) : *Six drugs :* PAS, moxifloxacin, high dose INH, clofazimine, linezolid, amoxyclay.

## 954. Which drug is not included in RNTCP regime for MDR TB ?

a) Cycloserine

b) Ethionamide

c) Levofloxacin

d) PAS

Correct Answer - D
Ans. is `d' i.e., PAS

**955. One TB unit is recommended for how much population in Hilly areas ?**

a) 50,000

b) 100,000

c) 150,000

d) 250,000

Correct Answer - D
Ans. is 'd' i.e., 250,000

## 956. Definition of relapse in TB ?

a) A patient who returns sputum positive after leaving treatment for at least 2 months.

b) A pateint who returns sputum positive which was cured by previous treatment

c) A patient who remains sputum positive after 5 months of treatment

d) None of the above

Correct Answer - B

**Ans. is 'b' i.e., A pateint who returns sputum postive which was curved by previous treatment**

**Some definitions of tuberculosis cases and treatment**

- *Case of tuberculosis :* A patient in whom tuberculosis has been confirmed by bacteriology or diagnosed by a clinician.
- *Sputum smear examination* - Laboratory technique to screen sputum for tuberculosis, where acid fast bacilli (AFB) are stained red by the Ziehl Neelsen method, and then identified and counted.
- using microscopy.
- *Smear positive tuberculosis* - At least one initial sputum smears positive for AFB or one AFB positive.
- *Smear negative tuberculosis* - At least two negative smears, but tuberculosis suggestive symptoms and X-ray abnormalities or positive culture.
- *Adherence* - Person takes appropriate drug regimen for required time (also known as compliance).
- *New case* - A patient with sputum positive pulmonary tuberculosis who has never had treatment for tuberculosis or has taken anti - tuberculosis drugs for less than 4 weeks.

- *Relapse* - A patient who returns smear positive having previously been treated for tuberculosis and declared cured after the completion of his treatment.
- *Failure case* - A patient who was initially smear positive, who began treatment and who remained or became mear positive again at five months or later during the course of treatment.
- *Return after default* - A patient who returns sputum smear positive, after having left treatment for at least two months.
- *Transfer in* - A patient recorded in another administrative area register and transferred into another area to continue treatment (treatment results should be reported to the district where the patient was initially registered). *Transfer out* - A patient who has been transferred to another area register and treatment results are not known. *Cured* - Initially smear positive patient who completed treatment and had negative smear result on at least two occasions (one at treatment completion).
- *Treatment completed* - Initially smear negative patient who received full course of treatment, or smear positive who completed treatment, with negative smear at the end of initial phase, but no or only one negative smear during continuation and none at treatment end.
- *Cohort* - A group of patients in whom TB has been diagnosed, and who were registered for treatment during a specified time period (e.g. the cohort of new smear-positive cases registered in the calender year 2003). This group forms the denominator for calculating treatment outcomes. The sum of the treatment outcomes, plus any case for which no outcome is recorded (eg. still on treatment) should equal the number of cases registered.
- *Case detection rate :* - The case detection rate is calculated as the number of notification of new and relapse cases in a year divided by the estimated incidence of such cases in the same year.

## 957. Daily dose of INH for TB ?

a) 600 mg

b) 300 mg

c) 150 mg

d) 1500 mg

Correct Answer - B
Ans. is 'b' i.e., 300 mg

## 958. In Revised National Tuberculosis Control programme the silent features are to achieve ?

a) Cure rate 85% & diagnosis 85%

b) Cure rate 85% & diagnosis rate 70%

c) Cure rate 80% & diagnosis 85%

d) Cure rate 80% & diagnosis rate 80%

Correct Answer - B

**Ans. is 'b' i.e., Cure rate 85% & diagnosis rate 70%**

**Revised National Tuberculosis Control Programme**

The Government of India, WHO and World Bank together reviewed the NTP in the year 1992. Based on the findings a revised strategy for NTP was evolved.

**The salient features of this strategy are : -**

- Achievement of *at least 85 percent cure rate of* infectious cases through supervised Short Course Chemotherapy involving peripheral health functionaries.
- Augmentation of case finding activities through quality sputum microscopy *to detect at least 70 percent estimated cases;* and
- *Involvement of NG0s;* Information, Education and communication and improved operational research.
- For a *"TB - free India"* following objectives have been proposed :

i. *To achieve 90% notification rate*

i. *To achieve 90% success rate for all new cases and 85% for retreatment cases*

i. To significantly improve the successful outcomes of treatment of drug resistant TB cases

6. To decrease morbidity and mortality of HIV associated TB
7. To improve outcomes of TB care in the private sector

**959. Which of the following anti-leprotic drug is not given under supervision ?**

a) Rifampicin

b) Clofazimine

c) Dapsone

d) All are given supervised

Correct Answer - C
Ans. is 'c' i.e., Dapsone

## 960. Secondary attack rate of chickenpox ?

a) 70%

b) 90%

c) 65%

d) 80%

Correct Answer - B
Ans. is `b' i.e., 9%

## 961. True about rash of chicken pox ?

a) Deep seated

b) Centripetal

c) Affects palm & sole

d) Slow evolution

Correct Answer - B
Ans. is 'b' i.e., Centripetal

## 962. Spread of chicken pox is maximum ?

a) After formation of scab

b) Just before and after onset of rash

c) One week before onset of rash

d) During convelescence

Correct Answer - B
Ans. is 'b' i.e., Just before and after onset of rash
Communicable period (period of maximum infectivity) in chicken pox is 2 days before to 5 days after onset of rash.

## 963. Incubation period of measles is:

a) 18-72 hours

b) 10-14 days

c) 3-4 days

d) 20-25 days

Correct Answer - B
**Ans. b.** 10-14 days

## 964. Incubation period of influenza -

a) 18 - 72 hrs

b) 1 - 6 hrs

c) 5 - 10 days

d) < 1 hrs

Correct Answer - A
Ans. is 'a' i.e., 18 - 72 hrs

## 965. Prevalence of Influenza in India ?

a) 10 per 10000 population

b) 10 per 100000 population

c) 10 per 1000 population

d) Data regarding prevalence of influenza is not adequate

Correct Answer - D
Ans. is 'd' i.e., Data regarding prevalence of influenza is not adequate

## 966. In epidemics measles vaccine is to be given within how many days of exposure ?

a) 3 days

b) 7 days

c) 10 days

d) 15 days

Correct Answer - A
Ans. is 'a' i.e., 3 days
Incubation period of measles virus is 10 days.
Incubation period of live attenuated measles virus of live vaccine is 7 days.
Thus, if the vaccine is given within 2-3 days of exposure, the replication of vaccine virus takes preference over replication of wild virus.
*"Susceptible contacts over the age of 9-12 months may be protected against measles with measles vaccine, provided that this is given within 3 days of exposure. This is because, the incubation period of measles induced by vaccine is about 7 days, compaired with 10 days for the naturally acquird measles."* — *Park*

## 967. Most common presentation of mumps ?

a) Pain and lacrimation of eye

b) Pain and swelling of parotid glands

c) Pain and swelling of submandibular and sublingual glands

d) Aseptic meningitis

Correct Answer - B
Ans. is 'b' i.e., Pain and swelling of parotid glands

## 968. Most common manifestation of mumps in adult males -

a) Aseptic meningitis

b) Encephalitis

c) Orchitis

d) Sinusitis

Correct Answer - C
Ans. is 'c' i.e., Orchitis
*Orchitis is the most common manifestation of mumps among postpubertal males.*

## 969. Most common type of polio is ?

a) Non-paralytic polio

b) Paralytic polio

c) Abortive illness

d) Inapparent infection

Correct Answer - D
Ans. is `d' i.e., Inapparent infection

## 970. Mortality of rabies is ?

a) 25%

b) 50%

c) 75%

d) 100%

Correct Answer - D
**Ans. is 'd' i.e., 100%**
**Rabies**
Rabies is primarily a zoonotic disease of warm-blooded animals, particularly carnivorous such as dogs, Cats, Jackals and wolves.

## 971. HIV screening for blood transfusion is done by -

a) NACO

b) ASHA

c) Ministry of education

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., NACO [Ref Park 23rd/e p. 437]**

- Access to safe blood for the needy is the primary responsibility of NACO (National AIDS control organization).
- Guidelines for blood bank, blood donors and dialysis unit have been formulated.
- The strategy is to ensure safe collection, processing, storage and distribution of blood and blood products.
- Testing of every unit of blood is mandatory for HIV, HBV, HCV, malaria, syphilis.

## 972. Cluster testing technique is useful in which of the following conditions?

a) Sexually Transmitted Diseases

b) Poliomyelitis

c) Measles

d) Smallpox

Correct Answer - A
**Explanation:** Following methods are used for case detection of STD:
• **CONTACT TRACING:** Contact tracing is the term used for the technique by which the sexual partners of diagnosed patients are identified, located, investigated, and treated.
• **CLUSTER TESTING:** Here the patients are asked name other persons of either sex who move in the same socio-sexual environment. These persons are then screened.

**Ref:** Park's textbook of Preventive and Social Medicine, 21stedition, Page 313

**973. Prevalence of HIV infection in antenatal women is less than 1% and in high risk population is less than 5%. The state belongs to ?**

a) Group I

b) Group II

c) Group III

d) Group IV

Correct Answer - C
Ans. is `c' i.e., Group III
Based on sentinel surveillance data **HIV** prevalence in adult population can be broadly classified in three groups of state / UT sin the country.

## 974. In AIDs control programme, For treatment of STDs, blue colored pack is used for treatment of-

a) Urethral discharge

b) Scrotal swelling

c) Genital ulcers

d) Ano-rectal discharge

Correct Answer - C

**Ans. is 'c' i.e., Genital ulcer**

**NACO centers providing ART (as of sept 2006)**

- The National AIDS control organization (NACO) has increased the numbers of centres providing ART from 54 to 91 centres with another 9 more centres also getting operational soon.
- All the 9lcentres have specially appointed and trained doctors, counsellors and laboratory technicians to help initiate patients on ART and follow them regularly.
- At these 91 centres medicines for treating 85000 patients have been made available.
- The ART is a *combination of three potent drugs,* which is being given to the persons with advanced stage of AIDS.
- Apart from providing *free treatment,* all the ART centres are providing counselling to the infected persons so that they maintain regularly of their medication.
- ACO has branded the STI/RTI services as "Suraksha clinic" and has developed a communication strategy for generating demand for these services.

## 975. Cholera vaccination is indicated ?

a) To control epidemics

b) For travellers

c) In endemic areas

d) In Neonates

Correct Answer - C
Ans. is 'c' i.e., In endemic areas
*Cholera vaccination should be considered in areas where cholera is endemic.*
However, it should always be done in conjunction with implementation of safe water, sanitation and hygiene promotion programme.
In resource poor areas, vaccination should be targeted at children aged 2 years.
Cholera vaccine *has not been recommended in outbreak/epidemic settings* or complex humanitarian emergencies because of the logistical challanges of administering 2-dose vaccine, and concern that long-scale vaccination would divert limited resources from higher priority measures.
As it does not prevent epidemic cholera transmission, it is not recommended for general population.
Cholera transmission is not recommended for travelers, as counseling about risk avoidance is more cost effective than vaccination.

## 976. All are true about epidemiological features of cholera except ?

a) Epidemic is self limiting

b) Poor sanitation is a cause of epidemic

c) El Tor biotype has decreased endemicity

d) Onset of epidemic is abrupt

Correct Answer - C

*The El Tor biotypes have greater endemic tendency* than its classical counterpart in that it causes a higher infection-to-case ratio (i.e. more inapparent infections and mild cases).

About other options

- Cholera epidemic has an abrupt onset. It starts as *common source epidemic* and often treat an acute health problem. Then it continues as a *propagated epidemics* as cases become the source for the other persons.
- Cholera epidemic in a community is self-limiting. This is attributed to the acquisition of temporary immunity, as well as due to the occurrence of a large number of subclinical cases.
- Poor environmental sanitation is the most important predisposing factor for epidemic

## 977. To determine the endemicity of hepatitis B, what should be measured ?

a) HBsAg

b) HBcAg

c) HBeAg

d) Anti-HBeAg

Correct Answer - A

**Ans. is 'a' i.e., HBsAg**

HBsAg testing is widely used as a marker of HBV infection in epidemiological surveys.

**<u>Serological markers for HBV</u>**

**Serological markers for HBV infection are *:?***

- *HBs Ag (surface antigen or Australia antigen) :* It *is* the *first marker which appears in the serum.* It is the epidemiological marker for HBV infection.
- *HBc Ag (core antigen) :* It is *not demonstrable* in serum because it is enclosed by HBsAg coat.
- *HBe Ag (envelope antigen) :* It is marker of *active replication and high infectivity.* It is qualitative marker of replication. HBs Ag carrier mothers who are HBe Ag positive almost invariably (> 90%) transmit hepatitis B infection to their offspring, where as HBs Ag carrier mothers with anti HBe rarely (10 to 15%) infect their offspring.
- *Anti-HBc Ag :* It is the first antibody appears in serum. *IgM anti-HBc Ag is a marker of acute or recent infection.* IgG anti-HBc Ag indicates remote infection.
- *Anti-HBs Ag :* It is *protective antibody.* It is the *only serological marker present after vaccination. After an infection, its presence indicates recovery and end of period of communicability.*

- *Anti-HBe Ag :* Its presence indicate stopage of replication and low infectivity.
- *HBV DNA :* It is *quantitative marker* of HBV replication.

## 978. An epidemiologist visits a village and wants to collect data for recent parasitic activity. What should be measure ?

a) Spleen rate

b) Infant parasite rate

c) Slide positivity rate

d) Slide falciparum rate

Correct Answer - B

**Ans. is 'b' i.e., Infant parasite rate**

**MEASUREMENT OF MALARIA**

- In the *pre-eradication era,* the magnitude of the malaria problem in a country used to be determined mostly from the reports of the *clinically diagnosed malaria cases* and the classical malariometric measures, e.g., spleen rate, parasite rate etc.
- On the other hand, during eradication era, the *microscopic diagnosis* of malaria cases became the main method of diagnosis and the parameters used are mostly parasitological in nature e.g., API, ABER, SPR and SFR.

**<u>Measurements of malaria in the pre eradication era</u>**

a) Spleen rate:

- *Defined as the percentage of children between 2 & 10 years of age showing enlargement of spleen. Spleen rate is widely used for measuring the endemicity of malaria in a community.*

b) Av. enlarged spleen :

- *A refinement of spleen rate , denoting the average size of spleen.*

c) Parasite rate :

- *Defined as on the percentage of children between the ages of 2 &*

*10 yrs showing malarial parsites in their blood films.*

d) Parasite density index :

- *Average degree of parasitimia*

e) Infant parasite rate

- *Percentage of infants showing malarial parasites in their blood films. It is the most sensitive index of recent transmission of malaria in a locality. If the infant parasite rate is zero for three consecutive years in a locality, it is regarded as absence of malaria transmission even though, the Anopheline vectors responsible for previous transmissions may remain.*

**<u>Eradication Era</u>**

a) Annual Parasite Incidence (API)*

= (Confirmed cases during one year / population under surveillance) x 1000

b) Annual Blood Examination Rate = (No. of slides examined/population) x 100

- *ABER is an index of operational efficiency.*
- *In the modified plan of operation, the minimum prescribed is 10 percent of the population in a year*

c) Annual falciparum index

d) Slide positivity rate

- Slide positivity rate is the percentage of slides found positive for malarial parasite, irrespective of the type of species.

**Slide falciparum rate**

- It is the percentage of slides positive for P. falciparum.

## 979. Index of operational efficiency of Malaria ?

a) API

b) ABER

c) Infant parasite rate

d) Spleen rate

Correct Answer - B
Ans. is 'b' i.e., ABER
Annual blood examination rate (ABER) is an index of operational efficiency.

## 980. False about transmission of Rubella ?

a) Droplet infection

b) Vertical transmission

c) Infection in early pregnancy causes milder disease

d) Fetus affected in late pregnancy may have only deafness

Correct Answer - C
Ans. is 'c' i.e., Infection in early pregnancy causes milder disease

## 981. Risk period for maximum fetal damage by congenital rubella ?

a) First trimester of pregnancy

b) Second trimester of pregnancy

c) Third trimester of pregnancy

d) Risk is same throughout the pregnancy

Correct Answer - A
Ans. is 'a' i.e., First trimester of pregnancy
*In general, the earlier in pregnancy infection occurs, the greater the damage to the fetus. Maximum damage to the fetus occurs when infection is acquired in the first trimester of pregnancy.*

## 982. AFP surveillance registry indicator is ?

a) Number of AFP cases reported

b) Number of wild polio-virus positive cases

c) Number of non-polio AFP < 5 years

d) Number of non-polio AFP < 15 years

Correct Answer - A

Ans. is 'a' i.e., Number of AFP cases reported

*The number of AFP cases reported each year is used as an indicator of a country's ability to detect polio,* even in countries where the disease no longer occurs.

**Polio surveillance**

- It is the most important part of whole polio eradication intiative. It has two components:?

**Acute flaccid paralysis (AFP) surveillance**

Acute flaccid paralysis is defined as *acute onset (< 4 weeks) of flaccid paralysis (reduced tone) without other obvious cause* in children *WHO recommends the immediate reporting and investigation of every case of AFP in children less than 15 years.*

**983. Polio is said to be eradicated if no case of polio by wild poliovirus occurs in an area for ?**

a) 1 year

b) 2 years

c) 3 years

d) 4 years

Correct Answer - C
Ans. is 'c' i.e., 3 years
Certification of polio eradication is conducted an regional bases. Each region can consider certification only when all countries in the area demonstrate *the absence of wild poliovirus transmission for at least three consecutive years.*

## 984. Dose of rabies immunoglobulin for post-exposure prophylaxis ?

a) 10 IU/kg

b) 20 IU/kg

c) 30 IU/kg

d) 40 1U/kg

Correct Answer - B
Ans. is 'b' i.e., 20 IU/kg
*Dose of rabies immunoglobulin (equine immunoglobulin)* → 20 IU/kg body weight.
*Dose of F (ab)$_2$ products* → 40 IU/kg body weight.

## 985. An american wants prophylaxis for Hepatitis-A before coming to India for 10 days. What should be given ?

a) Two dose of HAV vaccine

b) immunoglobulin

c) Antiviral drug prophylaxis

d) Nothing is required

Correct Answer - B

**Ans. is 'b' i.e., Immunoglobulin**

**<u>Advice for travellers</u>**

**Some of the recommendation pertain to the following :?**

1. Avoid bathing with polluted water as this may result in ear, eye and skin infections. Excessive heat and humidity or over-exertion in these conditions may lead to exhaustion from loss of water and salt.
2. The measures for prevention of insect bites.
3. *Diarrhoeal Diseases :* "Be careful what you eat" is common advice to travellers, but very few truely understand its implications. Diarrhoea affects an estimated 20-50 per cent of all travellers. Contaminated food drinks are the most common source of these infections. Careful selection and preparation of food and drink offer the best protection. Unfortunately appearance of food is no guide as to its safety. The main personal proection is to consider unpasteurized milk, non-bottled drinks, uncooked food (apart from the fruits and vegetables that can be peeled or shelled), as likely to be contaminated and therefore unsafe. The food should be throughly and freshly cooked. Use boiled water or bottled mineral water (now available everywhere). Travellers should be aware of the importance of oral

rehydration fluids containing salt and glucose for countering dehydration.

4. *Malaria :* There is a high risk of acquiring malaria in endemic areas. Travellers are advised to protect themselves by chemoprophylaxis. Drug prophylaxis should begin at the latest on the day of arrival in the malarious areas and continued for 4-6 weeks after leaving the malarious areas.
5. *Hepatitis A :* Normal human immunoglobulin in a dose of 0·02-0·05 mg/kg of body weight has been recommended every 4 months. Ideally immunoglobulin should not be given within 3 weeks before, or untill 2 weeks after administration of a live vaccine. A highly safe, inactivated HAV vaccine is available in several European countries.
6. *Hepatitis E :* There is no vaccine against hepatitis E and immunoglobulin prepared in Europe and USA does not give much of protection. Avoidence of contaminated food and water is the only effective protective measure.
7. *Hepatitis B :* Hepatitis B vaccines are available and are safe. Three doses of vaccine constitute the complete course. The first two doses are given one month apart and the third dose about 6 months later.
8. *STD and HIV :* Measures for preventing STD are the same whether the individual is travelling abroad or not, i.e. avoidance of sex altogether or limit it to a single faithful, uninfected partner. Use of condom is an important preventive measure. To reduce the risk of acquiring HIV and hepatitis B from syringes and needles, travellers should avoid injectable drugs and if an injection is essential they should make sure that the needle and syringe come from sterile pack.
9. *Yellow fever :* Vaccination certificate for yellow fever is the only certificate required for international travel. Yellow fever vaccine is recommended for travellers to countires designated as yellow fever endemic zone.
10. *Tetanus :* It is a wise precaution for the traveller to have a booster dose of tetanus toxoid if 10 years or more have elapsed since the last injection of a complete course or booster.

## 986. Amplifier for Japanese encephalitis ?

a) Horse

b) Pigs

c) Dogs

d) Monkey

Correct Answer - B
Ans. is 'b' i.e., Pigs

**987. A patient comes with CLW on knee 10x2 cm, 12 hours old. He had taken TT 6 months back for another injury. What should be done ?**

a) Nothing should be done

b) One dose of TT with immunoglobulin

c) Full course of TT

d) Full course of TT with immunoglobulin

Correct Answer - B
Ans. is 'b' i.e., One dose of TT with immunoglobulin
**Prevention of tetanus after injury**
All wounds must be thoroughly cleaned soon after injury - removal of foreign bodies, soil dust, necrotic tissue. This procedure will abolish anaerobic conditions which favour germination of tetanus spore.

## 988. Major sign for AIDS surveillance in WHO case definition ?

a) > 10% weight loss

b) Cough > 1 month

c) Generalized lymphadenopathy

d) Disseminated Herpes

Correct Answer - A

**Ans. is *'a' i.e.*, > 10% weight loss**

**<u>WHO case definition for AIDS surveillance</u>**

- For the purpose of AIDS surveillance an adult or adolescent (six years of age) is considered to have AIDS if at least *2 of the following major signs* are present in combination with *one minor sign.*

***Major* Signs**

- Weight loss > 10 % of body weight
- Chronic diarrhoea for more than 1 month
- Prolonged fever for more than 1 month

**Minor signs**

- Persistent cough for more than one month
- Generalized pruritic dermatitis
- History of herpes zoster
- Chronic progressive or disseminated herpes simplex infection
- Generalized lymphadenopathy
- Oropharyngeal Candidiasis.

**<u>Expanded WHO case definition for AIDS surveillance</u>**

- For the purpose of surveillance on adult or adolescent (>12 years of age) is considered to have AIDS if a test for
- HIV antibody gives a positive result and one or more of the following conditions are present :

- >10% body weight loss or cachexia, with diarrhoea or fever or both, for at least 1 month, not known to be due to a condition unrelated to HIV infection.

## 989. Typhoid oral vaccine is given ?

a) 1, 3, 5 days

b) 1, 2, 3 days

c) 1, 2, 4 days

d) 1, 7, 14 days

Correct Answer - A

**Ans. is 'a' i.e., 1, 3, 5 days**

**ANTI-TYPHOID VACCINES**

- The old parenteral killed whole-cell vaccine was effective but produced strong side-effects.
- So, they are not used now.
- Two safe and effective vaccines are now licensed and available : -

1.The Vi polysachharide vaccine

.. It is composed of purified Vi capsular polysaccharide from the Ty2 strain of S.Typhi.

2. It is administered *subcutaneously or intramuscularly.*
3. Only *one dose* is required.
4. The vaccine confers protection 7 *days after injection.*
5. To maintain protection, re-vaccination is recommended every 3 years.
6. The vaccine is licensed for individuals *aged 2 years.* → It does not elicit immune response in children < 2 years.
7. The vaccine is stable for 6 months at 37° C and for 2 years at 20°C. The recommended storage temprature is *2-8°C.*
8. The Vi polysaccharide vaccine can be co-administered with other vaccines relevant for international travellers-such as yellow fever and hepatitis A
9. Acyclovir is given to prevent the development of systemic disease in

varicella infected immunosuppresed patients & can halt the progression of zoster in adults.

- Varicella zoster immunoglobulin given within 72 hrs of exposure can prevent chicken pox and is recommended in exposed immunocompromised persons.
- A live attenuated varicella vaccine is recommended for children between 12-18 months. It is effective even if given within 3-5 days after exposure.

2.The Ty 21a oral vaccine

- It is an *orally* administered, *live attenuated* Ty2 strain of S.Typhi in which multiple genes (including for Vi Capsular polysaccharide) have been mutated chemically.
- This lyophilized vaccine is available in 2 preparations : *?*

1. *Enteric coated capsules* → Used for travellers to developing countries. It is used in individuals 5 years of age.

*2.Liquid suspension* → Used by public health programmes for young children in developing countries. It can be administered from the age of 2 years.

.. *Vaccine is administered on 1, 3 and 5the day, i.e., a 3-dose regimen is recommended.*

2. Vaccine confers protection 7 days after the last dose.

3. The recommendation is to repeat this series (3 doses) every 3 years for people living in endemic areas, and every year for individuals travelling from non-endemic to endemic countries.

4. Ty 21 a requires storage at *2-8°C,* it retains potency for approximately 14 days at 25°C.

5. Proguanil and antibacterial drugs should be stopped from 3 days before until 3 days after giving Ty 21 a, as these drugs may harm live bacteria.

6. The vaccine is not efficacious if administered at the time of ongoing diarrhea.

7. Avoided during diarrhoea as efficacy will reduce.

8. Can be given to HIV +ve, asymptomatic persons with CD4 cell count of > 200/mm3

9. Well tolerated and has low rates of adverse events.

0. Not recommended in congenital or acquired immunodeficiency, acute febrile illness, acute intestinal infection and in patients on

antimitotic drugs

.. May be given simultaneously with live vaccines of polio, cholera, yellow fever and MMR.

## 990. True about typhoid vaccines are all except ?

a) Vi polysaccharide vaccine is given in single dose

b) Storage temperature is +2 to +8°C

c) Typhoral vaccine is given in 3 doses

d) Typhoral vaccine cannot be given with other live vaccines

Correct Answer - D
Ans. is 'd' i.e., Typhoral vaccine cannot be given with other live vaccines

## 991. Rabies vaccine was first developed by ?

a) Robert Koch

b) Louis Pasteur

c) Edward Jenner

d) Loeffler

Correct Answer - B

**Ans. is 'b' i.e., Louis pasteur**

**Louis pasteur is associated with :**

- Development of live vaccine (first was anthrax)
- *Development of vaccine for rabies (hydrophobia)*
- Introduction of technique of sterilization
- *Disprove the theory of spontaneous generation (abiogenesis)*
- Established the different growth need of different bacteria (helped in complex media)
- Coined the term vaccine

## 992. True about influenza ?

a) Incubation period 2-3 weeks

b) Most infections are subclinical

c) Type-A virus causes Reye's syndrome

d) Pandemic is caused by Type-B virus

Correct Answer - B

**Ans. is 'b' i.e., Most infections are subclinical**

**<u>Influenza</u>**

- Influenza virus a RNA virus, belongs to orthomyxovirus.
- There are three viral subtypes : *i) Type A* (causes all pandemics and most epidemics); type B; and type C (not circulating currently).
- Currently the influenza viruses circulating in the world are : *$11_1$ N, of type A (causes swine flu);* H2 N2 of type A; $H_3$ $N_2$ of type A ; $H_5$ $N_I$ of type A (causes birdflu or avian influenza); *$H_7$ $N_9$ of type A (caused epidemic of avian influenza in China in 2013);* and type B.
- Influenza shows *cyclic trend* with epidemic occuring every 2-3 years in case of influenza - A and every 4-7 years in case of influenza-B. Pandemics are caused by only influenza - A every 10-15 years.
- *Influenza affects all ages and both sexes.*
- Source of infection of influenza is a clinical case or subclinical case.
- *Major reservoir of influenza virus exists in animal and birds.*
- Incubation period is 18-72 hours. *Most of the infections are subclinical. Clinical cases* present with cough, fever, myalgia and headache.

## 993. Aedes aegypti index near ports should be less than -

a) 1%

b) 5%

c) 8%

d) 10%

Correct Answer - A
Ans. is 'a' i.e., 1%
For the surveillance of Aedes mosquitoes, the WHO uses an index known as *Aedes aegypti index.*
This is a house index and is defined as *"The percentage of houses and their premises, in a limited well-defined area, showing actual breeding of Aedes aegypti larvae".*
*This index should not be more than 1% in towns and seaports in endeic areas to ensure freedom from yellow fever.*
**International health regulation for yellow fever**
Measures designed to restrict the spread of yellow fever are specified in the "International health regulation" of WHO.

- These are implemented by the *Govt of India* through stringent aerial and maritime traffic regulations.
- Broadly these comprise : -
  *i) Travellers*
- All travellers (including infants) exposed to yellow fever or passing through endemic zones of yellow fever must posses a valid international certificate fo vaccination against yellow fever before they are allowed to enter yellow fever receptive areas like India.
- *The validity of the certificate begins 10 days after the date of vaccination* and extends up to 10 years.

- Revaccination performed before the end of the validity of certicicate renders the certificate valid for a further period of 10 years starting on the day of revaccination.
- If no such certificate fo vaccination is available, the travellar is placed on *quarantine for 6 days from the date of leaving an infected area.*

*ii) Mosquitoes*

- The aircraft and ships arriving from endemic areas are subjected to aerosol spraying with prescribed insecticides.
- *Airports and Seaports are kept free from the breeding of insect vectors over an area extending at least 400 metres around their perimeters.*
- *The "aedes aegypti index" is kept below 1.*

## 994. All are true regarding Japanese encephalitis except ?

a) Caused by flavivirus

b) Humans are dead-end hosts

c) Transmitted by culex

d) Cattles are amplifier hosts

Correct Answer - D

**Ans. is 'd' i.e., Cattles are amplifier hosts**

**Japanese encephalitis**

- Caused by a *group B arbovirus (flavivirus)*
- It is a *Zoonotic disease* ie infecting mainly animals and incidentally man.
- In south, epidemics have occured in *Karnataka,* Andhra predesh, TamilNadu, and Kerala.
- Human, cattle, and horses are dead-end hosts as the disease manifests as fatal encephalitis.
- Pigs act as an amplifying host and have a very important role in the epidemiology of the disease.
- Infection in swine is asymptomatic, except in pregnant sows, when abortion and fetal abnormalities are common sequelae.
- The most important vector is *Culex tritaeniorhynchus*, which feeds on cattle in preference to humans.
- The natural hosts of the Japanese encephalitis virus are birds, not humans.
- In November 2011, the Japanese encephalitis virus was reported in *Culex bitaeniorhynchus* in South Korea

## 995. Endemic typhus is transmitted by ?

a) Louse

b) Fleac

c) Tick

d) Mite

Correct Answer - B
Ans. is 'b' i.e., Flea

## 996. In calendar method of contraception, first day of fertile period is?

a) 10th day of shortest menstural cycle

b) 18th day of shortest menstural cycle

c) 10th day of longest menstural cycle

d) 18th day of longest menstural cycle

Correct Answer - A

**Ans. is 'a' i.e. 10$^{th}$ day of shortest menstural cycle**

**<u>Safe Period (rhythm method)</u>**

- This is also known as the *calendar method* first described by Ogino.
- The method is based upon the fact that ovulation occurs from 12 to 16 days before the onset of mensturation.
- Calculation is as follows :
- *The shortest cycle minus 18 days gives the first day of the fertile period.*
- *The longest cycle minus 10 days gives the last day of fertile period.*
- For example, if a woman's menstural cycle varies from 28-31 days, the fertile period during which she should not have intercourse would be from the 10th day to 21st day of the menstural cycle, counting day one as the first day of the menstural period. Thus, the 1$^{st}$ day of fertile period is 10$^{th}$ day of shortest cycle.

## 997. Billings method of contraception is based on ?

a) Change in temperature

b) Change in cervical mucus

c) Safe period (calendar method)

d) Coitus interruptus

Correct Answer - B
**Ans. is 'b' i.e., Change in cervical mucus**

Miscellaneous methods of contraceptions
These are (i) Abstinence, (ii) Coitus interruptus, (iii) Safe period (rhythm method), and (iv) Natural family planning methods.
Abstinence
There is complete abstinence from sexual intercourse. It is not used and can hardly be considered as a method of contraception to be advocated for the masses.
Coitus interruptus
It is the oldest method of voluntary fertility control. The male withdraws before ejaculation and thereby tries to prevent the deposition of semen into the vagina. The failure rate is very high at 25%.
Natural family planning methods
These are :?
Basal body temperature (BBT) method: It is based on the principle that there is a rise BBT at or just before ovulation.
Cervical mucus method (Billings method or ovulation method) : It is based on the observation that at the time of ovulation cervical mucus becomes watery clear resembling raw egg white, smooth, slippery

and profuse.
Symptothermic method: This method combines temperature, cervical mucus, and safe period (calendar method) methods.

## 998. Not a copper containing IUD ?

a) CuT-200

b) Nova -T

c) Multiload-250

d) LNG-20

Correct Answer - D
Ans. is `d i.e., LNG-20
LNG-20 is third generation IUD which does not contain cooper.
Other three options are 2"$^{d}$ generation (copper containing) IUDs.

## 999. Absolute contraindication for insertion of IUD

a) History of PID

b) Congenital uterine malformation

c) Undiagnosed vaginal bleeding

d) Purulent cervical discharge

Correct Answer - C

**Ans. is 'c' i.e., Undiagnosed vaginal bleeding**

**Contraindications**

**ABSOLUTE:**

a. Suspected pregnancy
b. Pelvic inflammatory disease
c. Vaginal bleeding of undiagnosed etiology
d. Cancer of the cervix, uterus or adnexa and other pelvic tumours
e. Previous ectopic pregnancy

**RELATIVE :**

a. Anaemia
b. Menorrhagia
c. History of PID since last pregnancy
d. Purulent cervical discharge
e. Distortions of the uterine cavity due to congenital malformations, fibroid
f. Unmotivated person

## 1000. Contraception with increased risk of actinomycosis ?

a) OCPs

b) Condom

c) IUCD

d) Vaginal

Correct Answer - C
Ans. is `c' i.e., IUCD

## 1001. Pearls index?

a) Per 100 woman years

b) Per 10 woman years

c) Per 1000 woman years

d) Per 50 woman years

Correct Answer - A
Ans. is 'a' i.e., Per 100 woman years

## 1002. Iron content of MALA-D ?

a) 10 mg

b) 19-5 mg

c) 29·5 mg

d) 40 mg

Correct Answer - B
**Ans. is 'b' i.e., 19-5 mg**
**MALA-D contains -**
i) 30 ug (0·03 mg) of ethinyl estradiol.
ii) 0·15 mg of desogestrel (D-norgestrel).
Each brown coloured film coated tablet contains *60 mg ferrous fumarate equivalent to ferrous iron 19·5 mg.*

**1003. Minimum number of ANC visits required as per 2010 MOHFW (Ministry of Health and Family Welfare) guidelines ?**

a) 1

b) 2

c) 3

d) 4

Correct Answer - D
Ans. is 'd' i.e., 4
Now, at least 4 antenatal visits, during pregnancy, are recommended.

## 1004. India belongs to which stage of the demographic cycle ?

a) Slow stationary

b) High stationary

c) Early stationary

d) Late expanding

Correct Answer - D
Ans. is 'd' i.e., Late expanding
Demographic process
Fertility
Mortality
Marriage
Migration
Social Mobility
Demographic cycle
Stage 1 : High stationary
High birth rate and high death rate render the population stationary.
Narrow demographic gap.
Stage 2 : Early expanding
Death rate declines and birth rate remains unchanged
The demographic gap starts increasing and then becomes maximum
Stage 3 : Late expanding
Death rate decline further and birth rate falls
India is in this stage, currently
The demographic gap starts declining
Stage 4 : Low stationary
Low birth rate and low death rate renders the population stationary
Narrow demographic gap

Stage 5 : Declining
Population begins to decline as birth rate is lower than death rate
The demographic gap is negative

## 1005. Percentage of women 15-24 years age group in India ?

a) 10%

b) 20%

c) 30%

d) 40%

Correct Answer - B
Ans. is 'b' i.e., 20%
In India percentage of women in 15-24 years age group.

## 1006. Least Neonatal mortality rate is seen in -

a) Delhi

b) Tamil Nadu

c) Karnataka

d) Maharashtra

Correct Answer - B
Ans. is 'b' i.e., Tamil Nadu
Overall, least neonatal mortality is recorded in Kerala. However, among the given options Tamilnadu has minimum neonatal mortaltiy.

## 1007. Denominator in perinatal mortality rate ?

a) Total births

b) Total live births

c) Live births + Still birth

d) Total number of newborns

Correct Answer - B
Ans. is 'b' i.e., Total live births

## 1008. Current MMR in India is (per 1 lac live births) ?

a) 400

b) 280

c) 180

d) 110

Correct Answer - C
Ans. is 'c' i.e., 180

## 1009. In MCH programme, best indicator for mother and child health ?

a) MMR

b) IMR

c) Still birth rate

d) Neonatal mortality rate

Correct Answer - B
Ans. is 'b' i.e., IMR
IMR is best indicator for:-
1. Health status of a community.
2. Level of living.
3. *Effectiveness of MCH services.*

*IMR is second best indicator of socioeconomic status of country (under 5 mortality rate is more refined indicator for socioeconomic status).*

## 1010. Not a baby friendly hospital recommendation ?

a) Breast feeding with half-hour of birth

b) Breast feeding on demand

c) Use of artificial teats when required

d) No oral feed other than breast milk

Correct Answer - C

**Ans. is 'c' i.e., Use of artificial teats when required**

**<u>Baby friendly hospital initiatives</u>**

Baby friendly hospital initiative (BFHI) was launched for *promotion, protection and support of breastfeeding.*

It was launched by *WHO and UNICEF.*

BFHI has listed following ten steps, which the hospital must fulfill.

1. Have a written breastfeeding policy that is routinely communicated to all health care staff
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate berastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated.
7. Practice rooming-in-allow mothers and infants to remain together - 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.

).

| |
|---|
| Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic. |

## 1011. Average daily breast milk output during first 6 months ?

a) 100-200 ml

b) 200-300 ml

c) 300-400 ml

d) 500-600 ml

Correct Answer - D
Ans. is 'd' i.e., 500-600 ml
Under normal conditions, Indian mothers secrete 450 - 600 ml of milk daily
Maximum output of milk is at 5 - 6 months (730 ml/ day) after which the output constantly declines.
At 12 months the output is 525 ml/day -Park p. 455

## 1012. Protein content in F-75 milk formula ?

a) 0·5 gm per 100 ml

b) 0-9 gm per 100 ml

c) 1-5 gm per 100 ml

d) 2·0 gm per 100 ml

Correct Answer - B
Ans. is `b' i.e., 0·9 gm per 100 ml

## 1013. WHO defines adolescent age between ?

a) 10-19 years of age

b) 10-14 years of age

c) 10-25 years of age

d) 9-14 years of age

Correct Answer - A
Ans. is 'a' i.e., 10 - 19 Years of age

## 1014. Stage of contraction of family starts at ?

a) Marriage

b) Birth of first child

c) Birth of last child

d) Leaving home of first child

Correct Answer - D
Ans. is `d' i.e., Leaving home of first child

## 1015. Fluoride helps in ?

a) Vision

b) Dentition

c) Myelination

d) Joint stability

Correct Answer - B
Ans. is 'b' i.e., Dentition

## 1016. Recommended level of fluoride in drinking water?

a) 0·2-0·5 mg/L

b) 0-5-0·8 mg/L

c) 0·8-1·2 mg/L

d) 1·2-2·0 mg/L

Correct Answer - B
Ans. is 'b' i.e., 0·5 - 0·8 mg/L
The recommended level of fluoride in drinking water in the country is accepted as 0·5 to 0·8 mg/ Liter. *-Park*
Maximum permissible limit is 1·5 mg/Lit.

## 1017. Dental fluorosis occurs if fluoride level is more than

a) 0.5 mg/dl

b) 1-5 mg/dl

c) 3 mg/dl

d) 6 mg/dl

Correct Answer - B
**Ans. is 'b' i.e., 1-5 mg/dl**
Dental fluorosis → > 1.5 mg/L (PPM)
Skeletal fluorosis → 3-6 mg/L (PPM)
Crippling fluorosis → > 10 mg/L (PPM)

## 1018. Neurolathyrism is due to ?

a) Argemone oil

b) Jhunjhunia

c) Khesari dal

d) None

Correct Answer - C
Ans. is 'c' i.e., Khesari dal

## 1019. Recommended daily dietary requirment of folate (folic acid) in children ?

a) 80-120 µg

b) 200 µg

c) 400 µg

d) 600 µg

Correct Answer - A

Ans. is 'a' i.e., 80-120 µg

- Recommended daily allowances of folic acid are:-

a. *Healthy adults → 200 micro gm.(mcg)*
b. *Pregnancy → 500 mcg*
c. *Lactation → 300 mcg*
d. *Children → 80-120 mcg*

## 1020. Extra energy, needed per day during pregnancy?

a) 150 Kcal

b) 200 Kcal

c) 300 Kcal

d) 350 Kcal

Correct Answer - D
Ans. is 'd' i.e., 350 Kcal

## 1021. Recommended content of Iodine in salt at production level ?

a) 10 ppm

b) 15 ppm

c) 20 ppm

d) 30 ppm

Correct Answer - D
**Ans. is 'd' i.e., 30 ppm**
**Goitre control**

- There are following essential components of national goitre control programme.
  1. **Iodized salt**
- *The iodization of salt is now the most widely used prophylactic public health measure against endemic goitre.*
- In India the level of iodization is fixed under the Prevention of food adulteration (PFA) act and is *not less than 30 ppm at the production point and not less than 15 ppm of iodine at the consumer level.*
- Iodized salt is most economical, convenient and effective means of mass prophylaxis in endemic areas.
- Recently the National institure of Nutrition at Hyderabad has come out with a new product, *common salt fortified with iron and iodine —> two in one salt (twin fortified salt or double fortified salt).*
- *Iodized oil* --> It is another effective method for controlling goitre. IM injection of iodized oil *(mostly poppy seed oil)* is given. An average dose of 1 ml will *provide protection for 4 years.*
  2. **Iodine monitoring**
- Neonatal hypothyroidism is a sensitive pointer to environmental iodine deficiency and can thus be an effective indicator for

monitoring the impact of a programme.

**3. Manpower training**

**4. Mass communication**

*"The WHO regional strategy for the control of IDD has its principal objective the reduction of prevalence of goitre in areas of endemicity to 10% or below by the year 2000".*

## 1022. Pulses contain all except ?

a) Lysine

b) Cystein

c) Arginin

d) Protein

Correct Answer - B

**Ans. is `b' i.e., Cystein**

**Pulses**

- Pulses comprise a variety of grams, also known as dhal.
- Pulses contain 20 to 25% of protein, which is double that found in wheat and three times that found in Rice.
- In fact, pulses contain more protein than eggs, fish or flesh food. But in regard to quality, pulse proteins are inferior to animal proteins.
- *Pulse proteins are poor in methionine and to a lesser extent of cystein.*
- On the other hand pulse proteins are *rich in lysine.*
- Soyabeam is exceptionally rich in protein.
- Pulses are rich in minerals and B-group vitamins such as riboflavin and thiamin.
- In dry state pulses do not contain vitamin 'C'. However, *Germinating pulses contain higher concentration of vitamin 'C' and 'B' vitamins.*
- *Fermentation also modifies the nutritive value of pulses in that vitamin content of riboflavin, thiamine and niacin is enhanced.*
- Pulse are called *"poor man's meat".*

## 1023. Amino acid deficient in both Wheat and Maize ?

a) Lysine

b) Threonine

c) Tryptophan

d) Methionine

Correct Answer - A
**Ans. is 'a' i.e., Lysine**
**Wheat**

- Next to rice, wheat is the most important cereal.
- *The limiting amino acids in wheat proteins are lysine and threonine.*

## 1024. Good sources of vitamin 'C' are all except ?

a) Amala

b) Lime

c) Guava

d) Egg

Correct Answer - D
**Ans. is 'd' i.e., Egg**
***Vitamin* C**

- Also known as *ascorbic acid.*
- *It is the most sensitive of all vitamins to heat.*
- Man, monkey and guinea pigs are the perhaps the only species known to require vitamin 'C' in their diet.
- The richest source of vitamin C is *Indian goosebery (Amla).*
- Important sources of vitamin C in decreasing order : ?
- Amla > Guava > Cabbage > Amaranth > Lime > Cauliflower > Orange > Spinach > Tomato > Potato

## 1025. Maximum protein is found in ?

a) Egg

b) Soyabean

c) Rice

d) Wheat

Correct Answer - B
Ans. is 'b' i.e., Soyabean

## 1026. Protein content in 100 grams of cow milk

a) 4.3

b) 3.2

c) 2.2

d) 1.2

Correct Answer - B
Ans. is 'b' i.e., 3.2

# 1027. True about Indian reference female

a) Height 161 cm

b) Weight 60 kg.

c) BMI 22

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Height 161 cm**

**<u>Reference man and woman</u>**

Energy intake recommendations are formulated for a *"reference man"* and a *"reference woman"* whose profiles are described, and then necessary adjustment are made for subjects deviate from he standard reference.

*1.Indian reference man*

- He is between *18-29 years* of age.
- He weights *60 kg.*
- His height is 1.73 meter and BMI is 20.3
- He is free from disease and physically fit for active work.
- On each working day he is *employed for 8 hours* in occupation that usually involves *moderate activity.*
- Spends 8 hours in bed, 4 to 6 hours sitting and moving around and 2 hours in walking and in active recreation or household duties.

*2.An Indian reference woman*

- She is between *18-29 years* of age
- She weights *55 kg.*
- Her height is 1.61 meter and BMI is 21.2
- She is engaged for *8 hours* in houshold work, in light industry or in other moderate activity.
- Spends 8 hours in bed, 4 to 6 hours sitting and moving around and 2

hours in walking and in active recreation or household duties.

## 1028. Weight of an indian reference woman is ?

a) 45 kg

b) 50 kg

c) 55 kg

d) 60 kg

Correct Answer - C
Ans. is 'c' i.e., 55 kg

## 1029. RDA of vitamin A in an adolescent female ?

a) 400 mcg

b) 350 mcg

c) 600 mcg

d) 800 mcg

Correct Answer - C
Ans. is 'c' i.e., 600 mcg

## 1030. First ocular sign of Vitamin A deficiency ?

a) Bitot's spot

b) Conjunctival xerosis

c) Night blindness

d) Keratomalacia

Correct Answer - B
Ans. is 'b' i.e., Conjunctival xerosis

## 1031. Iodized salt is given to prevent goitre to ?

a) All population

b) Population of Himalayan belt

c) Population of Hilly areas

d) Population of village area

Correct Answer - A
Ans. is 'a' i.e., All population
In India, the **entire population** is prone to IDD due to deficiency of iodine in the soil of the subcontinent consequently the food derived from it.
*The iodization of salt is now the most widely used prophylactic public health measure against endemic goitre.*
In India the level of iodization is fixed under the Prevention of food adulteration (PFA) act and is *not less than 30 ppm at the production point and not less than 15 ppm of iodine at the consumer level.*

## 1032. Protein requirement in adult male ?

a) 0·5 gm/kg/day

b) 1 gm/kg/day

c) 1·5 gm/kg/day

d) 2 gm/kg/day

Correct Answer - B
Ans. is 'b' i.e., 1 gm/kg/day

## 1033. Nutrient which is lost maximum in polished rice?

a) Proteins

b) Thiamine

c) Ascorbic acid

d) Calcitriol

Correct Answer - B
Ans. is 'b' i.e., Thiamine
Effect of milling on rice
The milling process deprives the rice grain of its valuable nutritive elements

## 1034. Zinc supplement given in 12 month baby -

a) lgm/day

b) 10 mg/day

c) 5 mg/day

d) 15 mg/day

Correct Answer - C
Ans. is 'c' i.e., 5 mg/day
The requirements for infants range between 3·5 - 5·0 mg/day.

## 1035. RDA of zinc in a child ?

a) 10 mg

b) 20 mg

c) 6-8 mg

d) 4-5 mg

Correct Answer - C
Ans. is 'c' i.e., 6-8 mg
RDA of Zinc in children

- 1 - 3 years —> 3mg
- 4 - 8 years -5 5 mg
- 9 years and above (male) —> 8 - 11 mg
- 9 years and above (female) --> 8 mg

## 1036. Biological value of protein is

a) Increase in weight per unit protein consumed

b) Percentage of ingested protein retained inside the body

c) Percentage of absorbed nitrogen retained

d) Percentage of energy provided by a protein of food

Correct Answer - C

**Ans. is 'c' i.e., Percentage of absorbed nitrogen retained**

**<u>Assessment of proteins</u>**

Protein can be assessed qualitatively or quantitatively*:?*

*1) Protein quantity*

- It is assessed by the protein-energy *ratio.*

2) *Protein quality*

- It is assessed by *amino-acid score, biological value,* net protein utilization, protein efficiency ratio, and protein digestibility corrected amino acid score.

Protein energy Ratio (Protein-energy percentage)

- It is a *quantitative* measure for assessment of protein.
- It measures the percentage of energy that is provided by the protein in the food.

## 1037. Breast milk is deficient in which vitamin

a) Vitamin A

b) Vitamin B1

c) Vitamin K

d) Vitamin C

Correct Answer - C
Ans. is 'c' i.e., Vitamin K

- Exclusive breasfed infants may have following deficiencies -

1. Vit $B_{12}$ (if mother is strict vegetarian)
2. Fluoride
3. Vit D
4. Vit K

*"Breastfed infants are protected as the breastmilk contains adequate amounts of vitamin C, except when the mother is deficient in Vitamin C".*

## 1038. Disease associated with excessive maize diet ?

a) Wernicke's encephalopathy

b) Pellagra

c) Beri-Beri

d) Scurvy

Correct Answer - B
Ans. is 'b' i.e., Pellagra
*Excess of Leucine interferes in conversion of Tryptophan into Niacin, and aggravates the pallagrogenic action of maize.*
Similar to maize, *Jowar* also contains excess of *leucine.*
Leucine interferes with conversion of tryptophan to niacin.
Pellagra has been reported in India in *Telangana area of Andhra Pradesh* because of Jower (Sorghum vulgare) consumption.

## 1039. ICDS meals for pregnant women provides ?

a) 300 calories & 10 grams protein

b) 500 calories & 15 grams protein

c) 600 calories & 10 grams protein

d) 600 calories & 20 grams protein

Correct Answer - D

**Ans. is d i.e., 600 calories & 20 grams protein**

**Under ICDS Scheme supplementary nutrition is given to:**

- *Children below 6 yrs*
- *Nursing mothers*
- *Expectant mothers*

**The aim is to supplement nutritional intake for**

1. Each child 6-72 months of age 500 calories and 12-15 grams of protein (financial norm of Rs 6.00 per child per day).
2. Severely malnourished child 6-72 months of age → 800 calories and 20-25 grams protein (financial norm of Rs 6.00 per child per day).
3. Each pregnant and nursing woman → 600 calories and 18-20 grams of protein (financial norm of Rs 5.00 per beneficiary per day).

- Under the revised nutritional and feeding norms for supplementary nutrition, State goverments/UTs have been mandated to provide more than one meal to the children who come to AWCs, which include providing a morning snack in the form of milk/banana/egg/seasonal fruit/micronutrient fortified food followed by a hot cooked meal. For children below 3 years of age and pregnant & lactating mothers, *"take home ration"* is to be provided.
- *Supplementary nutrition is given for 300 days a year.*

## 1040. Mid-day meals provided in schools provide ?

a) 1/2 of total calories & 1/2 of protein

b) 1/3 of total calories & 1/2 of protein

c) 1/2 of total calories & 1/3 of protein

d) 1/3 of total calories & 1/4 of protein

Correct Answer - B
Ans. is `b' i.e., 1/3$^{rd}$ of total calories & 1/2 of daily protein requirement

## 1041. Vitamin deficient in Famines ?

a) A

b) D

c) $B_{12}$

d) B6

Correct Answer - A

**Ans. is 'a' i.e.,A [Ref Food scarcity and Famine p. 100]**

In times of food scarcity and famine, the most important deficiency disease is xerophthalmia (vitamin A deficiency), which can cause permanent blindness and may also contribute to increased incidence, severity and duration of infectious diseases like measles, diarrhea and respiratory tract infection.

**Where people are totally dependent on food aid rations, other deficiency diseases may also develop :-**

1. Scurvy (Vitamin C deficiency)
2. Pellagra (Niacin deficiency)
3. Nutritional anemia (Iron or folic acid deficiency)

## 1042. Under MCH programme, adult IFA tablet contains ?

a) 100 mg elemental iron and 0·1 mg FA

b) 100 mg elemental iron and 0·5 mg FA

c) 20 mg elemental iron and 0·1 mg FA

d) 20 mg elemental iron and 0-5 mg FA

Correct Answer - B

Ans. is 'b' i.e., 100 mg elemental iron and 0·5 mg FA

- ***Iron and Folic Acid content per IFA tablet:***
- *Adult tablet:* 100 mg elemental iron and 500 mcg folic acid
- *Pediatric tablet:* 20 mg elemental iron and 100 mcg folic acid
- *For preterm infants, recommended Iron and Folic Acid content per IFA tablet:*
- *Pediatric tablet:* 10 — 15 mg elemental iron and 100 mcg folic acid.

## 1043. Kala-azar is transmitted by ?

a) Reduvid bug

b) Sandfly

c) Tsetse fly

d) Mosquito

Correct Answer - B
Ans. is 'b' i.e., Sandfly

## 1044. Vector for transmission of sleeping sickness ?

a) Sandfly

b) Black fly

c) Tse-tse fly

d) Hard tick

Correct Answer - C
Ans. is 'c' i.e., Tse-tse fly

## 1045. Vagabond disease is transmitted by ?

a) Louse

b) Mite

c) Tick

d) Black Fly

Correct Answer - A
Ans. is 'a' i.e., Louse
Vagabond's disease is pediculosis corporis, caused by *body louse.*

## 1046. Which stage of larva of housefly is voracious feeder -

a) 1

b) 2

c) 3

d) 4

Correct Answer - A
Ans. is 'a' i.e., 1

- The larva of housefly (maggot) moults twice, i.e. there are three instar stages.
- *The first instar larva is a varacious feeder,* feeding mainly on decomposing liquid organic matter.

## 1047. False regarding larvae of anopheles ?

a) Long siphon tube

b) Parallel to water

c) Palmate hairs

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Long siphon tube

## 1048. Virus not sensitive to disinfection by chlorination

a) Rotavirus

b) Norwalk virus

c) Poliovirus

d) None

Correct Answer - C

**Ans. is 'c' i.e., Poliovirus**

**Chlorination**

- Chlorination is one of the greatest advances in water purification.
- Chlorine kills pathogenic bacteria, but has *no effect on spores, certain viruses (e.g., polio, viral hepatitis) and cyst of E.histolytica, in usual doses.*

**Mechanism of action**

- When chlorine is added to water, there is the formation of hypochloric and hypochlorous acid
- The hypochloric acid is neutralized by the alkalinity of the water.
- The hypochlorous acid ionizes to form hydrogen ions and hypochlorite ions.
- *The disinfecting action of chlorine is mainly due to the hypochlorous acid and to a small extent due to the hypochlorite ions.*
- *The hypochlorous acid is the most effective form of chlorine for water disinfection, it is 70-80 times more effective than hypochlorite ion.*

## 1049. Human anatomical wastes are treated/disposed by ?

a) Autoclaving

b) Chemical disinfection

c) Incineration

d) Microwaving

Correct Answer - C
Ans. is 'c' i.e., Incineration
*Human anatomical wastes such as human tissues, organs, and body parts are classified as Waste Category No. I They are disposed in 'plastic bags' with a 'yellow color code' and treated by 'Incineration or deep burial'.*

## 1050. Level of Hardness if the value is 50-150 mg/L ?

a) Soft water

b) Moderately hard water

c) Hard water

d) Very hard water

Correct Answer - B
Ans. is 'b' i.e., Moterately hard water

## 1051. Cytotoxic drugs are treated/disposed by ?

a) Autoclaving

b) Chemical disinfection

c) Incineration

d) Microwaving

Correct Answer - C
Ans. is 'c' i.e., Incineration
Cytotoxic drugs are category No. 5 wastes which are destroyed by incineration and disposed by secured landfills.

## 1052. Yellow bag is used for -

a) Waste sharp

b) Cytotoxic drugs

c) Animal waste

d) Chemical waste

Correct Answer - C
Ans. is 'c' i.e., Animal waste

## 1053. Incineration is done for waste category ?

a) Category 7

b) Category 9

c) Category 6

d) Category 5

Correct Answer - C
Ans. is 'c' i.e., Category 6

## 1054. Best way to dispose e-waste is?

a) Burning

b) Incineration

c) In a landfill

d) Recycling

Correct Answer - D
**Ans. is 'd' i.e., Recycling**
**<u>E-Waste</u>**

- E-waste is a popular, informal name for electronic products nearing the end of their "useful life.
- "E-wastes are considered dangerous, as certain components of some electronics products contain materials that are hazardous, depending on their condition and density.
- The hazardous content of these materials pose a threat to human health and environment.
- Discarded computers, television, VCRs, stereos, copiers, fax machines, electric lamps, cell phones, audio equiopment and batteries if improperly disposed can leach lead and other substances into soil and groundwater.
- Many of these products can be reused, refurbished, or recycled, or recyled in an environmentally sound manner so that they are less harmful to the ecosystem.
- Managment of E-Waste
- In industries management of e-waste should begin at the point of generation. This can be done by waste minimization techniques and by sustainable product design. Waste minimization in industries involves adopting:

.. inventory management,

2. production-process modification,
3. volume reduction,
4. *recovery and reuse*

**Inventory management**

- Proper control over the materials used in the manufacturing process is an important way to reduce waste generation.
- By reducing both the quantity of hazardous materials used in the process and the amount of excess raw materials in stock, the quantity of waste generated can be reduced.
- Developing review procedures for all material purchased is the first stop in establishing an inventory management program.
- Another inventory management procedure for waste reduction is to ensure that only the needed quantity of a material is ordered.

**Production-process modification**

- Changes cna be made in the production process, which will reduce waste generation.
- This reduction can be accomplished by changing the materials used to make the product or by the more efficient use of input materials in the production process or both.

**Volume reduction**

- Volume reduction includes those techniques that remove the hazardous portion of a waste from a non-hazardous portion.
- These techniques are usually to reduce the volume, and thus the cost of disposing of a waste material.

**Recovery and reuse**

- This technique could eliminate waste disposal costs, reduce raw material costs and provide income from a salable waste.
- Waste can be recovered on-site, or at an off-site recovery facility, or through inter industry exchange.

## 1055. Most common cancer in males in India ?

a) Ca rectum

b) Ca oral cavity

c) Ca testis

d) Ca bladder

Correct Answer - B
Ans. is 'b' i.e., Ca oral cavity
Most common cancer in males in India : Lip/oral cavity

## 1056. Blindness criteria in India ?

a) Vision < 3/60

b) Vision < 6/60

c) Vision < 12/60

d) Vision < 18/60

Correct Answer - B
Ans. is 'b' i.e., Vision < 6/60
*National programme for control of blindness (NPCB), India defines blindness as visual acuity of < 6/60 in better eve with best possible correction* In contrast to WHO, which defines blindness as visual acuity of < 3/60).

## 1057. Goal of NPCB was to reduce prevalence of blindness to ?

a) < 0·3% by 2000

b) < 0·3% by 2005

c) < 0·5% by 2010

d) < 0·5% by 2015

Correct Answer - A

**Ans. is 'a' i.e., < 0·3% by 2000**

**NATIONAL PROGRAMME FOR CONTROL OF BLINDNESS (NPCB)**

**The national program for Control of Blindness (NPCB) has been re-designated recently as the National Programme for Control of Blindness and Visual Impairment**

- *Launched in 1976*
- *Its objective is to reduce the prevalence of eye diseases in general, and the prevalence of blindness from 1·40% to 0·3% by 2000 AD.*
- Apex Centre (National Eye Institute) *is*
- Dr. Rajendra Prasad Centre for Ophthalmic Sciences (New Delhi, AIIMS).
- Revised strategies of NPCB
- a) To make NPCB more comprehensive by strengthening services for other causes of blindness like corneal blindness(requiring transplantation of donated eyes), refractive errors in school-going children, improving follow-up services of cataract operated persons and treating other causes of blindness like glaucoma; To shift from the eye camp approach to a fixed facility surgical approach and from conventional surgery to IOL implantation for better quality of post-

operative vision in operated patients.

- b) To expand the World Bank project activities like construction of dedicated eye operation theatres, eye wards at the district level, training of eye surgeons in modern cataract surgery and other eye surgeries and supply of ophthalmic equipment, etc. to the whole country.
- c) To strengthen the participation of Voluntary Organizations in the program and to earmark geographic areas to NGOs and Government Hospitals to avoid duplication of effort and improve the performance of Government Units like Medical Colleges, District Hospitals, Sub Divisional Hospitals, Community Health Centres, Primary Health Centres.
- d) To enhance the coverage of eye care services in tribal and other under-served areas through the identification of bilateral blind patients, preparation of village-wise blind register and giving preference to bilateral blind patients for cataract surgery.

## 1058. Revised strategy for NPCB includes all except *?*

a) Fixed facility surgery

b) IOL implantation for cataract

c) Mobile surgical camps

d) Uniform distribution

Correct Answer - C
**Ans. is 'c' i.e. Mobile surgical camps**
NATIONAL PROGRAMME FOR CONTROL OF BLINDNESS (NPCB)
The national program for Control of Blindness (NPCB) has been re-designated recently as the National Programme for Control of Blindness and Visual Impairment
Launched in 1976,
It is a 100% centrally sponsored scheme.
Its objective is to reduce the prevalence of eye diseases in general, and the prevalence of blindness from 1.40% to 0.3% by 2000 AD.
Apex Centre (National Eye Institute) is
Dr. Rajendra Prasad Centre for Ophthalmic Sciences (New Delhi, AIIMS).
Revised strategies of NPCB
a) To make NPCB more comprehensive by strengthening services for other causes of blindness like corneal blindness(requiring transplantation of donated eyes), refractive errors in school-going children, improving follow-up services of cataract operated persons and treating other causes of blindness like glaucoma; To shift from the eye camp approach to a fixed facility surgical approach and from conventional surgery to IOL implantation for better quality of post-

operative vision in operated patients.
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d) To enhance the coverage of eye care services in tribal and other under-served areas (uniform distribution) through the identification of bilateral blind patients, preparation of village-wise blind register and giving preference to bilateral blind patients for cataract surgery.

## 1059. The most common cause of blindness in India is ?

a) Cataract

b) Trachoma

c) Refractive errors

d) Vitamin A deficiency

Correct Answer - A
Ans. is 'a' i.e., Cataract

## 1060. Under National Cancer control Programme, oncology wings were sanctioned to -

a) Regional Cancer institutes

b) District Hospitals

c) Medical college Hospitals

d) Voluntary Agenecies treating cancer patients

Correct Answer - C

**Ans. is 'c' i.e., Medical college Hospital**

**o Government hospital and government medical colleges are provided with a grant of Rs 3.00 crores for the development of oncology wing.**

## 1061. RCH-II major strategies are all except ?

a) Essential obstetric care

b) Emergency obstetric care

c) Family planning

d) Strengthening referral system

Correct Answer - C

Ans. is 'c' i.e., Family planning

4 components of RCH programme are (i) Family planning; (ii) Child survival and safe motherhood; (iii) Client approach to health care, and (iv) Prevention of RTI/STD/AIDS.

**Reproductive and Child health Programme**

- RCH programme was launched in October 1997.
- Reproductive and child health approach has been defined as : -

1. People have the ability to reproduce and regulate their fertility.
2. Women are able to go through pregnancy and child birth safety.
3. The Outcome of pregnancies is successful in terms of maternal and infant survival and well being.

- Couples are able to have sexual relations free of fear of pregnancy and of contracting disease.
- RCH phase I programme incorporated the following components.

## 1062. A problem village is one where ?

a) Source of water > 1·6 km away

b) Water available > 15 meters depth

c) Excess of fluoride in water

d) All of the above

Correct Answer - D

**Ans. is `d' i.e., All of the above**

**A problem village has been defined as one**

- *Where no source of safe water is available within a distance of 1.6 km, or*
- *Where water is available at a depth of more than 15 meters,* or
- *Where water source has excess salinity, iron, fluorides and other toxic elements, or*
- *Where water is exposed to the risk of cholera.*

## 1063. Mental health programme was started in?

a) 1982

b) 1987

c) 1990

d) 1995

Correct Answer - A
Ans. is 'a' i.e., 1982
The Government of India has launched the National Mental Health Programme (NMHP) in 1982.
**Also know**
Mental health act was started in 1987.

## 1064. Most common type of mental retardation ?

a) Mild

b) Moderate

c) Severe

d) Profound

Correct Answer - A
Ans. is 'a' i.e., Mild

## 1065. Basic laboratory service is not available at PHC for which disease ?

a) TB

b) Malaria

c) Syphilis

d) Leprosy

Correct Answer - D

**Ans. is 'd' i.e., Leprosy**

**<u>Basic laboratory services at PHC</u>**

i. Routine urine, stool and blood tests.
i. Bleeding time, clotting time.
i. Diagnosis of RT1/STDs with wet mounting, Grama stain, etc.
v. Sputum testing for tuberculosis (if designated as a microscopy center under RNTCP).
v. Blood smear examination for malarial parasite.
i. Rapid tests for pregnancy.
i. RPR test for Syphilis/YAWS surveillance.
i. Rapid diagnostic tests for typhoid (Typhi Dot) and malaria.
x. Raid test kit for faecal contamination of water.
x. Estimation of chlorine level of water using orthotoludine reagent.

## 1066. Most important measure to prevent hospital infection ?

a) Use of antibiotics

b) Use of antiseptics

c) Proper hand washing

d) Formalin fumigation

Correct Answer - C

Ans. is 'c' i.e., Proper hand washing

There are following types of modes of transmission of hospital-acquired infections :

1) Contact transmission

i. It is the *most common and most preventable means of transmission.* It is divided into two types -

i. *Direct contact :* It involves contact of body surface to body surface with a physical transfer of microorganisms. *Hand contact is most common mode of transmission.*

i. *Indirect contact :* It involves body surface contact with a contaminated intermediate object.

- As hand contact is the most common mode of transmission, the best preventive measure of nosocomial infection is proper hand hygiene.

2) Droplet transmission

- It occurs when droplet containing microorganisms from an infected person are propelled through the air (e.g. coughing, sneezing) and land on the mouth, eyes or nose of another person.

3) Airborne transmission

- It results when a droplet containing microorganisms evaporates and remains suspended in air for a long time (this should not be confused with droplet infection, in which transmission is immediate

and droplets do not remains suspended in the air).

- Airborne transmission also occurs by dust particles containing microorganism.

4) Vehicle transmission

- It refers to transmission of infection by contaminated items such as food, water, medications, devices and equipment.

## 1067. True about critical path method are all except

a) Network analysis

b) Longest path

c) Cannot be delayed

d) Shortest path

Correct Answer - D

**Ans. is 'd' i.e., Shortest path**

**Network analysis**

A network analysis is a graphic of all events and activities to be completed in order to reach an end objective. It brings greater discipline in planning. The two common types of network technique are :

*a) Programme Evaluation and Review technique (PERT)*

*b) Critical Path method (CPM)*

Programme Evaluation and Review technique (PERT)

PERT is a management technique which makes possible more detailed planing and more comprehensive supervision.

PERT is method to analyze the involved tasks in completing a given project, especially the time needed to complete each task, and identifying the minimum time needed to complete the total project. The essence of PERT is to construct an arrow diagram, which represents the logical sequence in which events must take place. It is possible with such a diagram to calculate the time by which each activity must be completed, and to identify those activities that are critical.

**Critical path method (CPM)**

The *longest path* of the network is called the critical path. Critical

path method determines the activities of a project which are critical and are given longest path. Other activities are total float, i.e. they can be delayed without making the project longer. Any delay in activity on the critical path results in delay of the project. o In the above figure, the longest path is from equipment ordered to equipment installed.
That means, this is the *critical path* and *installating of equiment is the most critical step* (taking 10 months). o Other activities are total float, i.e. they can be delayed for sometimes without delaying the project.

## 1068. NFHS-3 was conducted in ?

a) 1992-93

b) 1998-99

c) 2005-06

d) 2009-10

Correct Answer - C

**Ans. is 'c' i.e., 2005-06**

**National family health survey (NFHS)**

- Is a large-scale, multi-round survey conducted in a representative sample of households throughout India.
- 3 *rounds of the survey have been conducted till date.*

1. NFHS-1: 1992-93
2. NFHS-2: 1998-99
3. *NFHS-3: 2005-06*

- *Goals of NFHS survey:*

1. To provide essential data needed by Ministry of Health & Family Welfare and other agencies for policy and programme purposes
2. To provide information on important emerging health and family welfare issues

- *Few key findings of NFHS-3, India (2005-06)*

1. Literacy rate : Male - 83%, Female - 59%.
2. IMR : 57 per 1000 live births.
3. TFR : 2.6
4. Contraceptive prevalence : 56% (Sterilization 37%)
5. 3 AN check ups : 51%.
6. *Took IFA :* 65% (Took IFA for 90 days) or more : 23%.
7. *Received > 2 TT injections : 76%*
8. *Institutional deliveries :* 41%

9. *Delivery assisted by health professionals :* 48%.
0. *Delivery conducted by a skilled provider :* 47%.
1. *Anemia - children :* 79%
2. *Anemia - pregnancy :* 58%
3. *Women experienced domestic violence :* 37%

## 1069. All are components of *'Health for all'* except ?

a) Adequacy

b) Acceptibility

c) Equity

d) Resource allocation

Correct Answer - D

**Ans. is 'd' i.e., Resource allocation**

**Health for All**

- Health for all' is defined as "attainment of a level of health that will enable every individual to lead a socially and economically productive life".
- The fundamental principle of HFA strategy is equity, that is, an equal, health status for people and countries, ensured by an equitable distribution of health resources.
- The best approach to achieve the goal for HFA is by providing primary health care.
- At least essential health care should be accessible to all individuals in an acceptable and affordable way.

The seven principles of health for all outline by WHO

i. The right to health
i. Health promotion
i. Equity in health ( equitable distribution)
v. Primary health care
v. Community participation
i. Intersectoral cooporation
i. Intersectoral collaboration

Primary health care (PHC) is one of the most important component.

The basic requirments for PHC are (8A's and 3C's) -

- Appropriateness
- Availability
- *Adequacy*
- Accessibility
- *Acceptibility*
- Affordability
- Assessability
- Accountability
- Completeness
- Comprehensiveness
- Continuity

## 1070. "3 by 5" initiative in AIDS control programme is ?

a) Providing 3 million people treatment by end of 2005

b) Providing treatment to 3 out of 5 patients

c) Reducing incidence of AIDS by 3% by 2005

d) All of the above

Correct Answer - A

**Ans. is 'a' i.e., Providing 3 million people treatment by end of 2005**

**3 by 5 target**

- On 1st December 2003, WHO and UNAIDS announced a detailed plan to reach the "3 by 5 target" of providing antiretroviral treatment (ART) to three million people living with HIV/AIDS in the developing countries by the end of 2005.
- Ultimate goal of this strategy is to provide universal access to ART to anyone who needs it.
- It has five Pillars (focus areas of concerns) :?

1. Simplified standard tools to deliver ART
2. A new service to ensure effective, reliable supply of medicines and diagnostics
3. Dissemination and application of new knowledge and successful strategy
4. Urgent, sustained support to countries
5. Global leadership, backed by strong partnership

# 1071. Impact indicator for ASHA ?

a) Number of ASHA trained

b) Infant mortality rate

c) % of institutional deliveries

d) % of JSY claims made to ASHA

Correct Answer - B
Ans. is 'b' i.e., Infant mortality rate
**Monitoring and Evaluation of ASHA's work**
Government of India has set up following indicators for monitoring ASHA (41).
**1.Process Indicators**
a) Number of ASHAs selected by due process
b) Number of ASHAs trained; and
c) % of ASHAs attending review meeting after one year
**2.Outcome Indicators**
a) % of newborn who were weighed and families counseled.
b) % of children with diarrhoea who received ORS.
c) % of deliveries with skilled assistance.
d) % of institutional deliveries.
e) % of JSY claims made to ASHA
f) % of completely immunized in 12 to 23 months age group.
g) % of unmet need for spacing contraception among BPL.
h) % of fever cases who received chloroquine with in first week in a malaria endemic area.
**3.Impact Indicators**
a) IMR
b) Child malnutrition rates
c) Number of cases of TB/leprosy detected as compared to previous year

year.

## 1072. Ujjwala scheme does not include ?

a) Rescue

b) Rehabilitation

c) Reintegration

d) Reward

Correct Answer - D
Ans. is `d' i.e., Reward

## 1073. Byssinosis is due to exposure of ?

a) Coal dust

b) Cotton dust

c) Sugarcane dust

d) Silica

Correct Answer - B
Ans. is 'b' i.e., Cotton dust
Byssinosis is due to exposure to *cotton dust* in *textile industries.*

**1074. Which of the following is used to represent continuous (quantitative) data ?**

a) Bar diagram

b) Pie chart

c) Histogram

d) Map diagram

Correct Answer - C
Ans. is `c' i.e., Histogram

## 1075. Which is best to represent the data of following table -

| Year | 1991 | 1992 | 1993 | 1994 |
|---|---|---|---|---|
| Number of LBW bodies | 75 | 125 | 50 | 25 |

a) Bar chart

b) Histogram

c) Frequency polygone

d) Scatter diagram

Correct Answer - A

**Ans. is 'a' i.e.,Bar chart**

We can plot the low birth statistics of a hospital on Bar chart, histogram or frequency polygon depending on what type of data we want.

- To know the total number of LBW neonates in different years and compare the frequencies Bar chart.
- To know the number of LBW neonates in different range of weights at a given time -) Histogram or frequency polygone.

## 1076. Test used to assess quantitative observations before and after an intervention ?

a) Unpaired T-test

b) Paired T-test

c) Chi-square test

d) Fisher-T-test

Correct Answer - B

**Ans. is 'b' i.e., Paired T-test**

**A paired t-test is used to compare two population means where you have two samples in which observations in one sample can be paired with observations in the other sample**

**this might occur in:**

**• Before-and-after observations on the same subjects (e.g. students' diagnostic test results before and after a particular module or course).**

**• A comparison of two different methods of measurement or two different treat**

**ments where the measurements/treatments are applied to the same subjects (e.g. blood pressure measurements using a stethoscope and a dynamap).**

Paired test : Is applied to paired data, when each individual gives a pair of observations such as : when observations are made before and after the play of a factor e.g. pulse rate before and after a drug. Further, it proceeds similar to the unpaired test.

**1077. People are arranged alphabetically by their names and then every 3rd person is chosen for study. The type of sampling is ?**

a) Stratified random

b) Systematic random

c) Simple random

d) None of the above

Correct Answer - B

**Ans. is 'b' i.e., Systematic random**

**<u>Simple random sampling</u>**

- Simple random sampling, also, known as *'unrestricted random sampling';* is applicable for small, homogenous, readily available population and is used in clinical trials.
- In simple random sampling each individual is chosen randomly and entirely by chance.
- So, *each individual has the same probability of being chosen* at any stage during the sampling process. *For example*
- Let us assume you had a school with 1000 students, divided equally into boys and girls, and you wanted to select 100 of them for further study.
- You might put all their names in a bucket and then pull 100 names out.
- Not only does each person have an equal chance of being selected, we can also easily calculate the probaility of

## 1078. Positive head impulse test is suggestive of ?

a) Injury to vestibular nuclei

b) Injury to peripheral vestibular nerve

c) Lesion in the brain stem

d) Injury to Occulomotor nerve

Correct Answer - B

**Ans. is `b' i.e., Injury to peripheral vestibular nerve**

**Head Impulse Test**

- It is also called head thrust test.
- It is test for the diagnosis of injury to vestibular nerve which forms the peripheral vestibular pathway.
- Clinician asks the patient to fix his gaze on a target and then perform passive horizontal and vertical head impulses and observes the patient's eyes.
- Observation of a refixation saccade after the head impulse indicates decreased decreasedvestibulo ocular reflex secondary to peripheral vestibular lesions (vestibular nerve involvement).

## 1079. Mini tracheostomy is performed through ?

a) Cricothyroid membrane

b) $2^{nd}$ and $3^{rd}$ tracheal rings

c) Any of the above

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Cricothyroid membrane**

**Cricothyrotomy or Laryngtomy or Minitracheostomy**

- It is the procedure to open the airway through the cricothyroid membrane.
- Patient's head and neck are extended, lower border of throid cartilage and cricoid ring is identified. Skin in this area is incised vertically and then cricothyroid membrane is opened with a transverse incision.
- It is an emergency procedure to buy time for the patient to be shifted to the operation theatre.

## 1080. Sago grain appearance is seen in ?

a) Healed myringitis bullosa

b) Otomycosis

c) Malignant otitis externa

d) Keratosis obturans

Correct Answer - A

**Ans. is 'a' i.e., Healed myringitis bullosa**

**Otitis externa haemorrhagica**

- This condition is also known as *Bullous myringitis or myringitis bullosa.*
- This condition is extremely painful and has sudden onset.
- It is thought to be due to *mycoplasma pneumoniae* or *viral infection, usually influenza'.*
- There may be a mild conductive deafness and a mildly discharging car.
- *The appearance of haemorrhagic bullae on the tympanic membrane and in the deep meatus is characteristic.* The bullae are filled with serosanguinous fluid and blood.
- On healing, bullae look like Sago-grain.
- Therefore *"Sago-grain" appearance* of tympanic membrane is seen in healed myringitis bullosa.

## 1081. Most common cause of trigeminal neuralgia ?

a) Infection

b) Trauma

c) Vascular compression

d) Iatrogenic

Correct Answer - C
Ans. is 'c' i.e., Vascular compression

- Trigeminal neuralgia (tic douloureux) is characterized by intermittent, shooting pain in the face.
- It is due to involvement of trigeminal nerve.
- 95% of causes of trigeminal neuralgia are due to pressure on trigeminal nerve close to where it enters the brain stem, past the Gasserian ganglion. *In most cases, this pressure seems to be caused by an artery or vein compressing trigeminal nerve.*
- Other causes are tumor, cysts, AV malformation and multiple sclerosis.
- Most commonly used drugs for treatment of trigeminal neuralgia are *carbamazepine, gabapentin and valproate.*

## 1082. When a patient says Ah the right uvula presses the palate which of the following nerve is damaged ?

a) Rght X CN

b) Right XII CN

c) Left X CN

d) Right XII CN

Correct Answer - C

**Ans. is 'c' i.e., Left X CN**

Assessment of the movement of soft palate - Both IX and X CNs are tested:

The glossopharyngeal nerve (IX CN) is a mixed nerve with motor, sensory and some parasympathetic activity. It carries sensory input from the palate and pharynx and the taste from the posterior third of the tongue. It provides afferent limb of the gag reflex.

The vagus (X CN) is also a mixed nerve with motor, sensory and parasympathetic activity. It provides the motor supply to the pharynx, soft palate and larynx and provides the efferent limb to the gag reflex.

Normally on oral examination thesoft palate is symmetrical with the uvula dangling in the centre and dividing the soft palate.

When the patient is asked to say AAAh! The soft palate should elevate symmetrically and the uvula should remain centric. If there is unilateral weakness of the soft palate the uvula is pulled away from the weakened side.

Now in the question given when the patient says aaah the right uvula presses the palate i. e. the right side soft palate pulls the uvula away from the weak left side. The weakness of the left soft palate

away from the weak left side. The weakness of the left soft palate can be because of the weakness of the left IX or X cranial nerves.

## 1083. Lumpy feeling in throat relieved on taking food is attributed to ?

a) Globus pharyngeus

b) Pharyngeal pouch

c) Diverticular disease

d) Esophageal atresia

Correct Answer - A

**Ans. is 'a' i.e., Globus Pharyngeus**

**Globus Pharyngeus**

- Symptom where in a patient describes something stuck in throat or a sensation of lump or tightness in throat which is relieved by taking food or talking.

## 1084. Strawberry tongue is seen in ?

a) Streptococcal scarlet fever

b) Kawasaki disease

c) Both of the above

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Both of the above
**Strawberry tongue**

- It is also called raspberry tongue
- It basically refers to glossitis, which manifests with hyperplastic (enlarged) fungiform papillae, giving the appearance of a strawberry.
- White strawberry tongue is where there is a white coating on the tongue through which the hyperplastic fungiform papillae protrude.
- Red strawberry tongue is where the white coating is lost and a dark red, erythematous surface is revealed, interspaced with the hyperplastic fungiform papillae.
- White strawberry tongue is seen in early scarlet fever (a systemic infection of group A hemolytic streptococci).
- Red strawberry tongue occurs later, after 4-5 days.
- Other conditions in which strawberry tongue is seen are: Kawasaki disease, toxic shock syndrome, and vitamin B 12 deficiency.

## 1085. Treatment of middle ear papilloma is ?

a) Myringotomy and simple excision

b) Myringectomy and simple excision

c) Tympanomastoidectomy

d) Local infiltration with podophyllin

Correct Answer - C
Ans. is 'c' i.e., Tympanomastoidectomy
Middle ear pappilomas
The middle ear papillomas are rare presentations and medical literature is mainly limited to case reports or case series.
These include aggressive pappilary tumors, schneiderian type of pappilomas and inverted pappilomas.
They are associated with hearing difficulty and vertigo and may be associated with Von Hippel Lindau syndrome.
They tend to be slowly growing, locally aggressive non metastasizing neoplasms
The approach for treatment of such pathology is usually radical and tympanomastoidectomy is considered the treatment of choice. This gives the best chance of cure.

## 1086. Best time for hearing assessment in an infant ?

a) 1st month of life

b) 3-6 months

c) 6-9 months

d) 9-12 months

Correct Answer - A
Ans. is 'a' i.e., 1st month of life
The American Academy of Pediatrics (AAP), Joint Committee on Infant hearing (2007), has recommended that all newborn infants be screened for hearing impairment *either as neonate or before 1 month of age* and that those infants who fail newborn screening have an audiologic examination to varify hearing loss before age of 3 months.

## 1087. Following protein is not found in organ of corti ?

a) Myosin

b) Microtubule associated protein 2

c) Microtubule associated protein 4

d) Fodrin

Correct Answer - C

**Ans. is 'c' i.e., Microtubule associated protein 4**

**Proteins present in cochlea**

- Actin-binding and microtubule-associated proteins regulate microfilament and microtubule number, length, organization and location in cells.
- In freeze-dried preparations of the guinea pig cochlea, both actin and tubulin are found in the sensory and supporting cells of the organ of Corti.
- Fodrin (brain spectrin) co-localized with actin in the cuticular plates of both inner and outer hair cells and along the lateral wall of the outer hair cells.
- Alpha-actinin co-localized with actin in the cuticular plates of the hair cells and in the head and foot plates of the supporting cells. It was also found in the junctional regions between hair cells and supporting cells. o Profilin co-localized with actin in the cuticular plates of the sensory hair cells.
- Myosin was detected only in the cuticular plates of the outer hair cells and in the supporting cells in the region facing endolymph.
- Gelsolin was found in the region of the nerve fibers.
- Tubulin is found in microtubules in all cells of the organ of Corti.
- In supporting cells, microtubules are bundled together with actin

microfilaments and tropomyosin, as well as being present as individual microtubules arranged in networks.

- An intensely stained network of microtubules is found in both outer and inner sensory hair cells.
- The microtubules in the outer hair cells appear to course throughout the entire length of the cells, and based on their staining with antibodies to the tyrosinated form of tubulin they appear to be more dynamic structures than the microtubules in the supporting cells.
- The microtubule-associated protein MAP-2 is present only in outer hair cells within the organ of Corti and co-localizes with tubulin in these cells. No other MAPs (1,3,4,5) are present.
- Tau is found in the nerve fibers below both inner and outer hair cells and in the osseous spiral lamina.

## 1088. Darwin tubercle is seen in ?

a) Tragus

b) Helix

c) Antihelix

d) Lobule

Correct Answer - B

**Ans. is 'b' i.e., Helix**

- Darwin's tubercle (or auricular tubercle) is a congenital earcondition which often presents as a thickening on the helix at the junction of the upper and middle thirds.
- The feature is present in approximately 10·4% of the population.This acuminate nodule represents the point of the mammalian ear.

## 1089. Incisura terminalis is between ?

a) Tragus and crux of helix

b) Ear lobule and antihelix

c) Antihelix and external auditory meatus

d) Tragus and ear lobule

Correct Answer - A
Ans. is 'a' i.e., Tragus and crux of helix
*Incisura ternzinalis* is the area between the tragus and crus of helix

## 1090. Callaural fistula is an abnormality of ?

a) 1" branchial arch

b) $P^t$ branchial cleft

c) $2^{nd}$ branchial arch

d) $2^{nd}$ branchial cleft

Correct Answer - B

**Ans. is 'b' i.e., $P^t$ branchial cleft**

- **Collaural fistula** is a **1" branchial cleft** anomaly which arises from failure of fusion of the ventral part of the $P^t$ cleft.
- Its **upper part** opens into *floor of external auditary canal.*
- Its *lower part* opens in the neck between angle of mandible and sternocleidomastoid muscle.

## 1091. Potato tumor due to ?

a) Hypotrophy of sebaceous glands of nose

b) Hypertrophy of sebaceous glands of nose

c) Hypotrophy of sweat glands of nose

d) Hpertrophy of sweat glands of nose

Correct Answer - B

**Ans. is 'b' i.e., Hypertrophy of sebaceous glands of nose**

**Rhinophyma (Potato tumor)**

- Rhinophyma is large, bulb-shaped, red-colored (ruddy) nose. It is a slow growing benign tumor due to hypertrophy of the sebaceous glands. The cause of rhinophyma is unknown, though it is thought to be a severe form of acne roscea. Rhinophyma was once thought to be caused by heavy alcohol consumption, but this is not the case. Rhinophyma occurs equally in those who do not drink at all and those who drink large quantities of alcohol. It mostly affects men past middle age. Red/pink colour of the tumor is due to engorgment of superficial vessels.

**Treatment**

- Surgery to reshape the nose is the best known treatment for rhinophyma. Surgery may be done with a laser (carbon dioxide laser), scalpel (sharp knife) or a rotating brush *(dermabrasion)* and the area is allowed to re-epithelialize. Sometimes, tumour is completely excised and the raw area is skin-grafted.

## 1092. Surgical markings for finding the facial nerve is are?

a) Tympano - mastoid suture

b) Tragal pointer

c) Posterior belly of digastric

d) All the above

Correct Answer - A

**Ans. is 'a' i.e., Tympano-mastoid suture**

**Surgical landmarks to identify main trunk of the facial nerve are as follows:**

i. Tympanomastoid suture line - it is located between the mastoid and the tympanic bones. The main facial trunk lies 6 -8 mm distal to the end of the suture.

i. Tragal pointer - the main nerve trunk lies 1·0 to 1·5 cm deep and slightly anterior and inferior to the tip of the external ear canal cartilage.

i. Posterior belly of digastric -the main nerve trunk lies 1 cm deep to the medial attachment of the posterior belly of digastric muscle to the digastric groove (mastoid notch) of the mastoid bone.

v. Mastoid bone - main nerve trunk is identified inside the mastoid bone by mastoidectomy.

## 1093. Which of the following is not a cause of oropharyngeal carcinoma?

a) Occupational exposue to hydrochloric acid

b) Smoking

c) Human Papilloma Virus infection

d) Occupational exposure to isopropyl oil

Correct Answer - A

**Ans. is 'a' i.e., Occupational exposure to hydrochloric acid**

**<u>Etiology of oropharyngeal carcinoma</u>**

i. Tobacco in any form - cigarette smoking or chewing
i. Heavy alcohol abuse
i. Beetle nut chewing
v. Plummer vinson syndrome, cirrhosis
v. Syphilis
i. Trauma
i. Dental irritation
i. Poor oral hygiene
x. Occupational exposure to isopropyl alcohol, sulphuric acid and nickel
x. HPV infection

## 1094. False regarding the foreign body of oropharynx is ?

a) Impacted foreign bodies most often lodge in the soft tissue at the base of tongue

b) Food particles are the most common oropharyngeal foreign bodies in children

c) Clinical hypopharyngeal foreign bodies are amenable to clinical examination

d) Endoscopy and MDCT are used in the diagnosis

Correct Answer - B

**Ans. is 'b' i.e., Food particles are the most common oropharyngeal foreign bodies in children**

**Oropharyngeal foreign bodies**

- Most ingested foreign bodies do not impact in the oropharynx
- Sharp foreign bodies like fish and chicken bones most commonly impact in the soft tissues at the base of the tongue.
- Hypopharyngeal foreign bodies can be detected by good physical examination.
- Endoscopy and MDCT are used in the diagnosis of foreign bodies of cervical esophagus.
- Coins are the most common impacted oropharyngeal foreign bodies encountered in children followed by food particles.

## 1095. Ostmann fat pad is related to ?

a) Ear lobule

b) Buccal mucosa

c) Eustachian tube

d) Tip of nose

Correct Answer - C
Ans. is 'c' i.e., Eustachian tube
There are small fat bodies located infermedial to Eustachian tube.
These are called Ostmann fat pads.
They are important in normal closure of eustachian tube and preventing transmission of nasopharyngeal pressure to middle ear.
These fat pads are absent in Patulous tube syndrome.

## 1096. Fowl smelling nasal discharge is seen in all except?

a) Nasal Myiasis

b) Choanal atresia

c) Foreign body in nose

d) Rhinolith

Correct Answer - B
**Ans. is `b' i.e., Choanal atresia**
**Diseases with fowl smelling nasal discharge are:**
Nasal myiasis
Foreign body in nose
Rhinolith
In choanal atresia there is presence of nasal discharge without air bubbles.

## 1097. Cauliflower ear is due to ?

a) Hematoma

b) Carcinoma

c) Fungal infection

d) Herpes

Correct Answer - A
**Ans. is 'a' i.e., Hematoma**
**Hematoma of the auricle**

- It is the collection of blood between the auricular cartilage and its perichondrium.
- It usually occurs due to blunt trauma and often seen in boxers, wrestlers and rugby players, therefore it is also called Boxer's ear.
- Extravasated blood may clot and then organise, resulting in typical deformity called, Cauliflower ear. If haematoma gets infected, *severe perichondritis* may set in.

## 1098. Fowl smelling ear discharge with presence of pale granulation tissue in ear in an adolescent boy is suggestive of ?

a) Cholesteatoma

b) Exostosis

c) Otomycosis

d) Malignant otitis externa

Correct Answer - A
Ans. is 'a' i.e., Cholesteatoma
Fowl smelling ear discharge with presence of granulation tissue in earin adolescent boy is suggestive chronic suppurativeotits media of the unsafe type (atticoantral disease). Such patients have underlying cholesteatoma along with evidence of bone destruction.
**Clinical features of cholesteatoma/atticoantral CSOM**

- *Otorrhoea :-* Scanty, foul smelling discharge due to bone destruction.
- *Hearing loss :-* Initially conductive due to destruction of ossicles. Later sensorineural element may be added, which results in mixed hearing loss.
- *Bleeding :-* May occur from granulation or the polyp when cleaning the ear.
- Tympanic membrane show posterior marginal or attic perforation. Also granulation tissue and polyps may be present in ear.

**1099.**

# Central part of cholesteatoma contains ?

a) Keratin debris

b) Keratinized squamous epithelium

c) Coulmnar epithelium

d) Fibroblasts

Correct Answer - A
**Ans. is 'a' i.e., Keratin debris**
**Cholesteatoma**
Destructive or expanding growth in the middle ear or mastoid process
The term cholesteatoma *is* a misnomer, because it neither contains cholesterol crystals nor is it a tumor to merit the suffix `oma'.
Cholesteatoma has the property to destroy bone. It may cause destruction of ear ossicles, erosion of bony labyrinth, canal of facial nerve, sinus plate or tegmen tympani and thus cause several complications. Bone destruction by cholesteatoma has been attributed to various proteolytic enzymes liberated by osteoclasts and mononuclear inflammatory cells, seen in association with cholesteatoma.
**Cholesteatoma consists of two parts : *?***
*i) Matrix :* - Made up of keratinizing squamous epithelium.
*ii) Keratin debris (central white mass) :* - Produced by the matrix.
Therefore, cholesteatoma also referred to as *epidermosisor keratoma.*

## 1100. Which of the following is included in the Levenson criteria for congenital cholesteatoma ?

a) White mass medial to normal tympanic membrane

b) Atticoantral perforation of the tympanic membrane

c) Definite history of otorrhoea

d) History of prior otologic procedures

Correct Answer - A

**Ans. is 'a' i.e., White mass medial to normal tympanic membrane**

**Levenson criteria for congenital cholesteatoma**

1. *White mass medial to normal TM.*
2. *Normal pars flaccida and tensa.*
3. *No history of otorrhea or perforations.*
4. *No prior otologic procedures.*
5. *Prior bouts of otitis media no ground for exclusions.*

**1101. Which of the following structures is not at immediate risk of erosion by cholesteatoma ?**

a) Long process of incus

b) Fallopian canal containing facial nerve

c) Horizontal/ lateral semicircular canal

d) Base plate of stapes

Correct Answer - D

Ans. is 'd' i.e., Base plate of stapes

- Cholesteatoma has the property to destroy the bone by virtue of the enzymes released by it.
- Structures immediately at the risk of erosion are : -

i. Long process of incus.
i. Fallopian canal containing facial nerve.
i. Horizontal / lateral semicircular canal

## 1102. Acute suppurative otits media in children is most commonly caused by ?

a) St. pneumoniae

b) S. epidermidis

c) S. aureus

d) Pseudomonas

Correct Answer - A

**Ans. is 'a' i.e., St. pneumonia [Ref Dhingra 5$^{th}$le p. 54]**

- ASOM is especially common in infants and children. Most of the time ASOM usually follows respiratory tract infections (i.e., acute tonsillitis, common cold or influenza) and the infection travel up by the eustachian tube to the middle ear.
- The most common causative organism is streptococcus pneumoniae

## 1103. Most common organism cultured in CSOM is ?

a) Staphylococcus aureus

b) Staphylococcus epidermidis

c) Streptococcus pneumonia

d) Pseudomonas aeruginosa

Correct Answer - D

**Ans. is 'd' i.e., Pseudomonas aeruginosa**

**Microbiology of CSOM**

- Pus culture in both types of aerobic and anaerobic CSOM may show multiple organisms.
- Most commonly isolated organisms are gram negative bacilli, i.e., Pseudomonas, proteus, E.coli.
- These organisms are not commonly found in the respiratory tract, while commonly found in the skin of external ear.

## 1104. Most common nerve to be damaged in CSOM is

a) III

b) VII

c) IV

d) VI

Correct Answer - B

Facial nerve is the M/C nerve to be damaged in CSOM.

## 1105. Attico antral disease is treated by ?

a) Modified radical mastoidectomy

b) Antibiotics

c) Grommet insertion

d) Synringing

Correct Answer - A

**Ans. is 'a' i.e., Modified radical mastoidectomy**

Treatment of atticoantral disease

Since cholesteatoma is going to expand and destroy bone and mucous membrane, it has to be removed. Therefore, *surgery is the mainstay of treatment.* Primary aim is removal of disease by mastoidectomy to make ear safe followed by reconstruction of hearing at a later stage. *Modified radical mastoidectomy is the surgery of choice.*

Two types of *surgical procedures (mastoidectomy)* are done to deal with cholesteatoma.

**1) *Canal wall down procedures***

- These leave the mastoid cavity open into the external auditory canal so that the diseased area is fully exteriorized.
- The commonly used procedures for atticoantral disease are *atticotomy, modified radical mastoidectomy* and rarely *radical mastoidectomy.*
- *Modified radical mastoidectomy is the procedure of choice.*

**2) Canal wall up procedures (cortical mastoidectomy)**

- Here disease is removed by combined approach through the meatus and mastoid but retaining the posterior bony meatus wall, thereby avoiding an open mastoid cavity.
- For reconstruction of hearing mechanism *myringoplasty* or

*tympanoplasty* can be done at the time of primary surgery or as a second stage procedure.

## 1106. In a patient with CSOM, labrynthine fistula most commnonly involves ?

a) Superior SCC

b) Lateral SCC

c) Posterior SCC

d) Utricle

Correct Answer - B

**Ans. is 'b' i.e., Lateral SCC**

- Labrynthine fistula is almost exclusively reported in association with chronic otitis media and cholesteatoma.
- *The most commonly affected canal is lateral (horizontal) semicircular canal,* but involvement of the posterior and superior canals as well as other regions of labyrinth have been reported.
- The incidence of labrynthine fistula in chronic otitis media is approximately 10%.

## 1107. Gradenigo syndrome is characterized by all except ?

a) Diplopia

b) Retro-orbital pain

c) Persistent ear discharge

d) Vertigo

Correct Answer - D

**Ans. is d i.e., Vertigo**

Infection of mastoid and middle ear may be complicated by the spread of infection within the temporal bone into *petrous apex.* Petrositis is an extension of infection from middle ear and mastoid to the petrous part of the temporal bone.

**Gradenigo's syndrome is the classical presentation and consists of a triad of : -**

- *External rectus palsy (VIth nerve/abducent nerve palsy) causing diplopia.*
- *Deep seated orbital or retroorbital pain (Vth nerve involvement).*
- *Persistent ear discharge due to ipsilateral acute or chronic otitis media.*

Associated symptoms of otitis media are also present e.g., *conductive deafness.* Other symptoms are fever, headache, vomiting, and sometimes neck rigidity. Some patient may get facial paralysis and recurrent vertigo due to involvement of facial and statoacoustic nerves.

## 1108. All are true for gradenigo's syndrome except ?

a) Associated with intermittent ear discharge

b) Associated with conductive hearing loss

c) Causes diplopia

d) Leads to retro orbital pain

Correct Answer - A
Ans. is 'a' i.e., Associated with intermittent ear discharge
**Gradenigo's syndrome**, also called **Gradenigo-Lannois syndrome**, is a complication of otitis media and mastoiditis involving the apex of the petrous temporal bone.

## Symptoms

Components of the syndrome include:

- **retroorbital pain** due to pain in the area supplied by the ophthalmic branch of the trigeminal nerve (fifth cranial nerve),
- abducens nerve palsy (sixth cranial nerve)
- otitis media

Other symptoms can include photophobia,
excessive lacrimation, fever, and reduced corneal sensitivity. The syndrome is classically caused by the spread of an infection into the petrous apex of the temporal bone.

## 1109. Following is the preferred treatment of Serous Otitis Media -

a) Grommet surgery

b) Oral Amoxicillin for 5 - 10 days

c) Modified radical mastoidectomy

d) Bed rest, antipyretics and adequate fluid intake

Correct Answer - A

**Ans. is 'a' i.e., Grommet surgery**

**Treatment of otitis media**

**Following two treatments have been described : ?**

**1) Watchful waiting**

- Watchful waiting is the active monitoring of the condition and hearing in anticipation of spontaneous resolution. Guidlines aimed at both primary care and specialist otolaryngologist broadly agree that a *watchful waiting period for about three months* is the initial management of children with serous otitis media. Therefore, *unless there are also signs of an infection, most health care providers will not treat SOM at first Instead, they will recheck the problem in 2-3 months.* This should be coupled with *reassurance* that doing nothing is as likely as doing something to result in resolution of the SOM and the associated symptoms.

**2) Surgery**

- Surgical intervention is recommended when watchful waiting and monitoring of hearing has confirmed failure of resolution of SOM. Following surgical intervention are used commonly : -

i. *Myringotomy and aspiration offluid :* -An incision is made in tympanic membrane and fluid aspirated with suction.

i. *Grommet (ventilation tube) surgery :* - If myringotomy and aspiration

combined with medical measures has not helped and fluid recurs, a grommet is inserted to provide continued aeration of middle ear. *This is the most common surgical intervention for SOM. Most prefered site of grommet insertion is antero-inferior through circumferential or radial incision.*

i. *Surgical treatment of causative factor :* - Adenoidectomy, tonsillectomy etc.

***Medical measures are controversial*** **and involve : ?**

..
2. Antiallergic measures
3. Antibiotics
4. Middle ear aeration :- Valsalva maneuver, Politzerisation or eustachian tube catheterization, Chewing gum.

# 1110. Multiple perforation of tympanic membrane characteristic of ?

a) Tubercular Otitis Media

b) Syphilitic Otitis Media

c) Pseudomonas infection

d) Fungal Otitis Media

Correct Answer - A

**Ans. is 'a' i.e., Tubercular otitis media**

**Tubercular otitis media**

- Tuberculosis of middle ear is a comparatively rare entity usually seen in association with or secondary to pulmonarytuberculosis, *infection reaches the middle ear through eustachian tube.*
- The rare modes of infection are through hematogenous spread from tubercular focus in lung, tonsils, cervical lymph nodes; or due to ingestion of infected cow's milk.
- It usually affects *children and young adults.*

**Clinical features**

- Generally, tuberculosis of middle ear is unilateral.
- *It is characterized by painless otorrhoea* which fails to respond to the usual antimicrobial treatment. There is painless watery otorrhea.
- *Single or multiple perforation of tympanic membrane.* There may be multiple perforations in the early stages, but they coalesce into a large tympanic membrane perforation accompanied by a *pale granulation tissue.*
- Periauricular fistulae, lymphadenopathy and facial palsy are infrequent findings.
- Late complications include facial paralysis, labyrinthitis, postauricular fistulae, subperiosteal abscess, petrous apicitis and intracranial

extension of infection.

**1111. Patient with thin painless otorrhoea, multiple perforations of the tympanic membrane and failure to respond to antimicrobial treatment. What is the most probable causative organism ?**

a) Mycobacterium tuberculosis

b) Staphylococcus aureus

c) Candida albicans

d) Aspegillusfumigatus

Correct Answer - A
Ans. is 'a' i.e., Mycobacterium tuberculosis
Thin painless otorrhoea, multiple perforations of the tympanic membrane and failure to respond to antimicrobial treatment are the features of tubercular otitis media and it is caused by Mycobacterium tuberculosis.

## 1112. Conducting hearing loss with intact tympanic membrane ?

a) Presbycausis

b) Meniere's disease

c) Glue ear

d) Acoustic neuroma

Correct Answer - C
Ans. is 'c' i.e., Glue ear
Among the given options, only glue ear (serous otitis media) is a cause of conductive deafness.

## 1113. Length of external auditory meatus is ?

a) 12mm

b) 16mm

c) 20mm

d) 24mm

Correct Answer - D

**Ans. is 'd' i.e., 24 mm**

**External auditory canal (External acoustic meatus)**

**External auditory canal is a *'S' shaped* canal with length of *24-25 mm* and it is divided into two parts :?**

1) Cartilagenous part

- It forms *outer/lateral 1/3 (8mm)* of the external auditory canal. It has two fissures / deficiencies in the anterior part called *fissure of santorini* through which parotid or superficial mastoid infection can appear in the canal and vice versa. Skin covering it is thick and has *ceruminous glands (modified apocrine sweat glands),* pilosebaceous glands and hair. Since hair is confined to cartilaginous part, *furuncles are seen only in the outer third of the canal.*

2) Bony part

- It forms *inner/medial 2/3 (16 mm)* of external auditory canal. Skin lining the bony part is thin and is *devoid of hair and ceruminous glands. Isthmus* is the narrowest portion of bony canal and is 5 mm lateral to tympanic membrane. Foreign bodies get lodged in isthmus are difficult to remove as it is the narrowest part. `*Foramen of Huschke'* is a deficiency present in *antero-inferior* part of bony canal in *children upto 4 years of age,* permitting infection to and from parotid.

## 1114. Not a cause of objective tinnitus ?

a) Palatal myoclonus

b) Glomus tumor

c) Carotid artery aneurysm

d) Presbyacusis

Correct Answer - D
**Ans. is 'd' i.e., Presbyacusis**
**Tinnitus**

- Tinnitus is ringing sound or noise in the ear.
- The characteristic feature is that the origin of this sound is within the patient.

## 1115. Which of the following is false regarding Frey's syndrome?

a) It is also called gustatory sweating

b) It is caused by injury to auriculotemporal nerve

c) It occurs immediately after the parotid surgery

d) It is caused by aberrant regeneration of post

Correct Answer - C

**Ans. is 'c' i.e., It occurs immediately after the parotid surgery**

**Frey's syndrome (gustatory sweating)**

- Gustatory sweating or Frey's syndrome involves post-parotidectomy *facial sweating and skin flushing while eating.*
- The symptoms usually occur several months or even years after *parotid surgery.*
- The likely pathophysiology is aberrant regeneration of postganglionic secretomotor parasympathetic nerve fibres (originating from the otic ganglion) misdirected through several axonal sheaths of post-ganglionic sympathetic fibres feeding the sweat glands. These sympathetic fibres are to the sweat glands of the skin in the dissected field.
- The frey's syndrome is likely due to *injury to auriculotemporal nerve* with faulty regeneration, therefore Frey's syndrome is also known as Auriculotemporal syndrome.
- *A variant of Frey's syndrome* in which there is gustatory facial flushing but not sweating, occurs following facial paralysis due to faulty regeneration following *injury to the facial* nerve. So, Frey's syndrome is not limited to parotid surgery with injury to auriculotemporal nerve.

## 1116. Synkinesis is a sequel of ?

a) Facial nerve paralysis

b) Trigeminal nerve paralysis

c) Superficial temporal nerve paralysis

d) Greater Petrosal nerve paralysis

Correct Answer - A

**Ans. is 'a' i.e., Facial nerve paralysis**

**Clinical features of Bell's palsy**

- *Acute onset, ipsilateral facial paralysis.*
- Facial paralysis is usually preceded by pain behind the ear.
- Patient is unable to close his eyes.
- Bells phenomenon, i.e. on attempting to close the eye, eyeball turns up and out.
- Face becomes asymmetrical and saliva dribbles from angle of mouth.
- Ipsilateral loss of taste sensation, salivation and lacrimation.
- Intolerance to high pitched or loud sound *(hyperacusis).*
- Most patients (80%) recover within few weeks to months.
- Synkinesis and crocodile tear are sequelae of Bell's palsy :-
- *Synkinesis or facial synkinesis* is a *common sequelae to Bell's palsy.* This is due to cross innervation of nerve fibres during recovery. When the patient wishes to close the eye, corner of mouth also twiches and vice versa.
- *Crocodile tear (gustatory lacrimation)* is due to faulty regeneration of parasympathetic fibres which now supply lacrimal gland instead of the salivary glands.

## 1117. Glomus jugulare commonly arises from ?

a) Hypotympanum

b) Mesotympanum

c) Epitympanum

d) Prussaks space

Correct Answer - A
**Ans. is 'a' i.e., Hypotympanum**
**There are two types of glomus tumors:-**
i) Glomus jugulare
These glomus tumors arise from the dome of the internal jugular vein in the *hypotympanum* and jugular foramen. In jugular foramen they can invade IX to XII cranial nerves.
ii) Glomus tympanicum
They arise from the promontory of the middle ear along the course of the tympanic branch of the IXth cranial nerve.

## 1118. Following are the laboratory tests for the diagnosis of vestibular dysfunction except ?

a) Electronystagmography

b) Optokinetic test

c) Galvanic test

d) Gelle's test

Correct Answer - D

**Ans. is 'd' i.e., Gelle's test**

**<u>Vestibular system</u>**

- The vestibular system contributes to *balance* and to the sense of *spatial orientation.*
- It is a sensory system that provides the leading contribution about movement and sense of balance.
- It includes the labyrinth (semicircular canals and otolith : utricle & sacules) of the inner ear and is situated in the vestibulum in the inner ear.
- The symptoms of vestibular dysfunction are *vertigo, dizziness and Unbalance.*

## 1119. Not a test for Eustachian tube patency ?

a) Tympanometry

b) Toynbee

c) Valsalva

d) Frenzel maneuver

Correct Answer - A
**Ans. is 'a' i.e., Tympanometry**
**Tests for Eustachian tubepatency**

- Valsalva test
- Methylene blue test
- Sonotubometry
- Politzer test
- Toynbee test
- Frenzel maneuver
- Catheterization
- Inflation - Deflation test

**1120. Horizontal acceleration with forward movement in the sagittal plane is detected by ?**

a) Macula of Utricle

b) Macula of Saccule

c) Lateral semicircular canal

d) Posterior semicircular canal

Correct Answer - A
Ans. is 'a' i.e., Macula of utricle

**1121.**

## Exostosis due to repetitive exposure to cold water is common in which part of the temporal bone?

a) Squamous part

b) Tympanic part

c) Ptreous part

d) Mastoid part

Correct Answer - B
Ans. is 'b' i.e., Tympanic part
**Surfer's ear**

- It is the common name for an exostosis or abnormal bone growth within the external auditory canal.
- Surfer's ear is not the same as swimmer's ear, although infection can result as a side effect.
- Irritation from cold wind and water exposure causes the bone surrounding the ear canal to develop lumps of new bony growth which constrict the ear canal. The condition is so named due to its prevalence among cold water surfers. Cold water surfers experience surfer's ear at about six times the rate of warm water surfers.
- Common site for surfer's ear is external auditory canal. Tympanic part of the temporal bone is a U shaped curved bony plate that forms most of the part of the external auditory canal. Thus exostosis is common in the tympanic part of the temporal bone.
- Note: Parts of temporal bone are: squamous, tympanic, styloid, petrous, and mastoid.

## 1122. Which of the following is not a derivative of the middle ear cleft ?

a) Semicircular canal

b) Mastoid air cell

c) Tympanic cavity

d) Eustachian tube

Correct Answer - A
Ans. is 'a' i.e., Semicircular canal
**The middle - ear cleft in the temporal bone includes :?**

i. Eustachian tube
i. The middle ear (tympanic cavity)
i. Aditus which leads posteriorly to the mastoid antrum and air cells.

**1123. When the patient fails to understand normal speech, but can understand shouted or amplified speech the hearing loss, is termed ?**

a) Mild hearing loss

b) Moderate hearing loss

c) Severe hearing loss

d) Profound hearing loss

Correct Answer - C

Ans. is 'c' i.e., Severe hearing loss

**Severe hearing loss**

What is severe hearing loss? On average, the most quiet sounds heard by people with their better ear are between 70 and 95 dB. People who suffer from severe hearing loss will benefit from powerful hearing aids, but often they rely heavily on lip-reading even when they are using hearing aids. Some also use sign language.

## 1124. Presence of delta sign on contrast enhanced CT SCAN suggests presence of ?

a) Lateral Sinus thrombophlebitis

b) Cholesteatoma

c) Cerebellar abscess

d) Mastoiditis

Correct Answer - A

**Ans. is 'a' i.e., Lateral Sinus thrombophlebitis**

**LATERAL SINUS THROMBOPHLEBITIS (SIGMOID SINUS THROMBOSIS)**

Lateral or sigmoid sinus thrombophlebitis arises from inflammation in the adjacent mastoid. It may occur as a complication of : ?

i. Acute coalescent mastoiditis
i. CSOM and cholesteatoma

**Clinical features**

- Hectic Picket-Fence type of fever with rigor.
- Headache, Progressive anemia and emaciation.
- *Griesinger's sign :* - odema over the posterior part of mastoid due to thrombosis of mastoid emissary veins.
- Papilloedema
- Tobey-Ayer test :- Compression of vein on the thrombosed side produces no effect while compression of vein on healthy side produces rapid rise in CSF pressure which will be equal to bilateral compression of jugular veins.
- *Crowe-Beck test :-* Pressure on jugular vein of healthy side produces engorgement of retinal veins. Pressure on affected side does not

produce such change.

- Tenderness along jugular vein
- Imaging studies
- Contrast-enhanced CT scan can show sinus thrombosis by typical *delta-sign.* It is a triangular area with rim enhancement, and central low density area is seen in posterior cranial fossa on axial cuts.
- Delta-sign may also be seen on contrast enhanced MRI.

## 1125. Ohgren's line passes from ?

a) Medial canthus to angle of mandible

b) Lateral canthus to angle of mandible

c) Medial canthus to mastoid process

d) Lateral canthus to mastoid process

Correct Answer - A
Ans. is 'a' i.e., Medial canthus to angle of mandible

## 1126. Which of the following is not true about inverted papilloma ?

a) It is always unilateral

b) It is more common in males

c) 10-15 % of the cases may be associated with squamous cell carcinoma

d) It is also called Ringertz tumor

Correct Answer - D

**Ans. is 'd' i.e., It is also called Ringertz tumor**

**Inverted Papilloma (Transitional cell papilloma / Schneiderion papilloma)**

- Inverted papilloma is a benign neoplasm occurs mostly between *40-70 years* with *male* preponderance (5 : 1). o It arises from the *lateral wall of nose* and is *always unilateral.* Rarely, it may arise from nasal septum. o *Features of inverted papilloma are :-*
- It shows finger like epithelial invasions into the underlying stroma of the epithelium rather than on surface so called inverted papilloma.
- It is usually unilateral and is a locally aggressive tumour.
- Patients complain of nasal obstruction, rhinorrhea & unilateral epistaxis.
- In 10-15% cases there may be associated squamous cell carcinoma.
- Treatment is adequate local excision. If it arises in maxillary sinus, then a radical antrostomy is carried out.If it arises in the ethmoidal sinus, an external ethmoidectomy is done. If it arises from nose, treatment is wide surgical excision by lateral rhinotomy.
- Has a tendency to recur even after removal.

## 1127.

## Inverted papilloma of nose arise from ?

a) Nasal septum

b) Roof of the nose

c) Tip of the nose

d) Lateral wall of the nose

Correct Answer - D

Ans. is 'd' i.e., Lateral wall of the nose

**Inverted Papilloma (Transitional cell papilloma/Schneiderion papilloma)**

- Inverted papilloma is a benign neoplasm occurs mostly between 40-70 years with male preponderance (5 : 1).
- It arises from the **lateral wall of nose** and is always unilateral. Rarely, it may arise from nasal septum.
- Features of inverted papilloma are : -
- It shows finger like epithelial invasions into the underlying stroma of the epithelium rather than on surface so called inverted papilloma.
- It is usually unilateral and is a locally aggressive tumour.
- Patients complain of nasal obstruction, rhinorrhea & unilateral epistaxis.
- In 10-15% cases there may be associated squamous cell carcinoma.
- Treatment is adequate local excision. If it arises in maxillary sinus,

then a radical antrostomy is carried out. If it arises in the ethmoidal sinus, an external ethmoidectomy is done. If it arises from nose, treatment is wide surgical excision by lateral rhinotomy.

- Has a tendency to recur even after removal.

## 1128. Which of the following is false regarding frontal sinusitis ?

a) Pain shows periodicity

b) Most common sinus involved in infants and children

c) Pain is referred to as office headache

d) Tenderness is present just above the medial canthus of eye

Correct Answer - B

Ans. is 'b' i.e., Most common sinus involved in infants and children

Most common sinus involved in infant and children is Ethmoid sinus.

**Clinical features of acute sinusitis**

*Most common presenting patient's compliant is persistent nasal discharge* which can be of any quality (thin, thick, clear, or purulent). Nasal discharge from a sinus infection *can be blood - tinged* from excessive nose blowing and irritation. The clinical symptoms of acute sinusitis have been classified into major and minor.

## 1129. Samters triad is seen in patients with ?

a) Asthma

b) Chronic pancreatitis

c) Crohn's disease

d) Liver cell carcinoma

Correct Answer - A
**Ans. is 'a' i.e., Asthma**
**Samter's triad**

- Samter's triad is a medical condition consisting of asthma, aspirin sensitivity, and nasal/ethmoidal polyposis. It occurs in middle age *(twenties and thirties are the most common onset times)* and may not include any allergies.
- *Most commonly, the first symptom* is rhinitis.
- The disorder typically progeses to asthma, then polyposis, with aspirin sensitivity coming last.
- The aspirin reaction can be severe, including an asthma attack, anaphylaxis, and urticaria in some cases. Patients typically react to other NSAIDS such as ibuprofen, although paracetamol is generally considered safe.
- Anosmia (lack of smell) is also typical, as the inflammation reaches the olfactory receptors in the nose.

## 1130. Nasopharyngeal carcinoma seen in which occupation?

a) Asbestos industry

b) Cement industry

c) Wood workers

d) Chimney workers

Correct Answer - C
**Ans. is 'c' i.e., Wood workers**
Ref Dhingra 4h/e p. 235; Nasopharyngeal carcinoma By Andrew Van Hasselt,

- Alan G. Gibb 2d/e p. 4
- Wood dusts exposure is a risk factor of nasopharyngeal carcinoma and
- Adenocarcinoma of PNS.
- Formaldehyde exposure is a risk factor of Nasopharyngeal carcinoma.

## 1131. Trotter triad not included is ?

a) Conductive deafness

b) Temporoparietal neuralgia

c) Palatal paralysis

d) Seizures

Correct Answer - D
**Ans. is 'd' i.e., Seizures**
**Trotter's triad**
Trotter's triad occurs in nasopharyngeal carcinoma
**It includes :-**
*i) Conductive deafness* (due to Eustachian tube blockage)
*ii) Temporo - parietal neuralgia* (due to involvement of ipsilateral $V^{th}$ cranial nerve)
*iii) Palatal paralysis* (due to involvement of $X^{th}$ cranial nerve)

## 1132. Following is true about laryngomalacia except ?

a) Omega shaped epiglottis

b) Reassuarance of the patient is the treatment of choice

c) Condition is first noticed in the first few weeks of life

d) Expiratory stridor

Correct Answer - D

**Ans. is 'd' i.e., Expiratory stridor**

**Laryngomalacia**

- It is the *most common congenital abnormality of the larynx.* Laryngomalacia is the *most frequent cause of stridor or noisy breathing in infants.* It occurs as a result of a floppy portion of the larynx (in supraglottic larynx) that has not yet developed the strength to provide rigid support to the airway. *During inspiration* negative pressure is created through larynx, which results in a collapse of these structures into the airway and a narrower breathing passage. Partial obstruction is the source of the noise with breathing (stridor), and sometimes cyanosis.
- The hallmark sign includes *intermittent stridor* mostly in *inspiration.* It is usually *more prominent when the infant is lying on his/her back (supine position, crying, feeding, excited or has a cold. Stridor gets relieved on placing the patient in prone position. This is usually first noticed in the first few weeks of life.*
- It may worsen over the first few months and become louder. This is because as the baby grows, inspiratory force is greater, which causes greater collapse of the laryngeal structures into the airway. *This is usually worst at 3-6 months* and then gradually improves as the rigidity of the cartilage improves.

- *Most children are symptom free by 1 to 2 years.*
- Sometimes, *cyanosis* may occur.
- Direct laryngoscopy shows :-
- *Omega shaped epiglottis,* i.e. elongated and curled on itself.
- Floopy, tall, foreshortened and thin aryepiglottic folds.
- Prominent arytenoids.
- In most patients laryngomalacia is a self limiting condition. Treatment of laryngomalacia is reassurance to the parents and early antibiotic therapy for upper respiratory tract infections.

**1133. Patient presents with mouth breathing, recurrent serous otitis media and adenoid facies. What is the best line of management ?**

a) Adenoidectomy

b) Tonsillectomy

c) Antibiotics

d) Supportive therapy

Correct Answer - A
Ans. is 'a' i.e., Adenoidectomy
The triad of nasal and aural symptoms with adenoid facies points to the diagnosis of enlarged adenoids.
For the treatment of enlarged adenoids when symptoms are not marked breathing excercise, decongenstant nasal drops and antihistaminics are used and when symptoms are marked, adenoidectomy is done.
We have a patient with marked and recurrent symptoms thus adenoidectomy is the treatment of choice.

## 1134. Rhinitis most common bacterial cause ?

a) Haemophilus influenza

b) Streptococcus haemolyticus

c) Pasturellamultocida

d) Cornybacterium diphtheria

Correct Answer - A
Ans. is 'a' i.e., Haemophilus influenza
Acute bacterial rhinitis is most commonly seen among children, but adult may develop the condition after nasal trauma, viral upper respiratory tract infection, or surgery.

- The clinical presentation of acute bacterial rhinitis may be identical to that of common cold.
- Most common *causative organisms include S. pneumoniae,* ***H.*** *influenzae and Moraxella Catarrhalis.*

**Note:** Overall, most common cause of infective rhinitis is viral infection (viral rhinitis).

## 1135. Which of the following organisms is known to cause Atrophic rhinitis ?

a) Klebsiella ozaena

b) Klebsiella pneumonia

c) Streptococcus pneumonia

d) Streptococcus foetidis

Correct Answer - A
**Ans. is 'a' i.e., Klebsiella ozaena**
**Atrophic rhinitis (Ozaena)**
Atrophic rhinitis is a chronic inflammation of nose characterized by atrophy of nasal mucosa, including the glands, turbinate bones and the nerve elements. Atrophic rhinitis may be primary or secondary : ?
1) Primary atrophic rhinitis
**The primary pathology is inflammation and atrophy of the nose. Generally, atrophic rhinitis refers to primary atrophic rhinitis.**
**Causes are : -**
i) Hereditary
ii) Endocrinal pathology - Starts at puberty. Stops after menopause
iii) Racial factors - Seen more in Whites and Yellow races
iv) Nutritional deficiency - Deficiency of vitamin A, D, E and iron may be responsible for it.
v) Infective - Klebsiella ozanae, Diphtheriods, P. vulgaris, E.coli, Staphylococci, Streptococci.
vi) Autoimmune process - Causing destruction of nasal, neurovascular and glandular elements may be the cause.
2) Secondary atrophic rhinitis
*Specific infections,* such *as syphilis, lupus, leprosy,* and

*rhinoscleroma,* may cause destruction of the nasal structures leading to atrophic changes. Can also results from *long standing purulent sinusitis , radiotherapy of nose, excessive surgical removal of the turbinate* and *as complication of DNS on the root side of nose.*

## 1136. Vidian neurectomy is done for ?

a) Allergic rhinitis

b) Atrophic rhinitis

c) Vasomotor rhinitis

d) Chronic hypertrophic rhinitis

Correct Answer - C

Ans. is 'c' i.e., Vasomotor rhinitis

**Vasomotor rhinitis**

- Vasomotor is a nonallergic condition that involves a constant runny nose, sneezing and nasal congestion, i.e., the nose is stuffy or runny for reasons other than allergies and infections. The exact etiology is unknown, but triggers include emotions, odors, poor air quality, spicy foods, and medication side effects. Pathogenesis include:-
- Parasympathetic overactivity
- Hyperactive nasal mucosa to several non-specific stimuli especially in women of 20-40 years.
- Symptoms of vasomotor rhinitis include excessive clear rhinorrhoea, nasal obstruction/congestion, irritation, paroxysmal sneezing and post-nasal drip. Nasal mucosa is hypertrophied & congested; and mucosa of turbinates may give mulberry like appearance and is pale to dusky red in colour.
- Complications of vasomotor rhinitis include hypertrophic rhinitis & sinusitis, and nasal polyp.

**Treatment**

- Treatment of vasomotor rhinitis includes : -

1. Conservative treatment

- Avoidance of physical factors which provoke symptoms.
- Antihistaminics and oral or nasal decongestants.

- Topical or systemic steroids
  2. Surgical treatment
- Nasal obstruction can be relieved by measures which reduce the size of hypertrophied nasal turbinate : -Cryosurgery, submucosal diathermy, Linear cauterization, partial or total turbinectomy, submucosal
- resection of turbinate.
- Excessive rhinorrhoea in vasomotor Rhinitis not corrected by medical therapy and bothersome to the patient, is relieved by sectioning the parasympathetic secretomotor fibres to nose i.e., **vidian neurectomy.**

## 1137. Young's operation is done for

a) Allergic rhinitis

b) Atropic rhinitis

c) Vasomotor rhinitis

d) Idiopathic rhinitis

Correct Answer - B

**Ans. is 'b' i.e., Atrophic rhinitis** ***[Ref Dhingra 5th/e p. 171; Essential otolaryngology 2"d/e p. 523]***

**Surgical treatment of Atrophic rhinitis**

1. Young's operation
2. Modified Young's operation
3. Narrowing of the nasal cavity by (Lautenslagers operation)
4. Lautenslagers operation

**1138.** **Which of the following is the most common form of malignant melanoma?**

a) Nodular

b) Superficial spreading

c) Acral lentiginous

d) Mucosal

Correct Answer - B

The commonest type of melanoma is the superficial spreading melanoma (SSM). The melanoma progress through 3 phases: in situ, radial growth, vertical growth.
NB: A primary melanoma with no recognizable adjacent in situ or radial growth phase is **nodular melanoma.**

Melanoma with similar prevalence in all ethnic groups- **acral lentiginous**

**Ref:** Rook's textbook of dermatology, Edition-8, Page-54.45.

## 1139. Rhinoscleroma occurs due to ?

a) Autoimmune cause

b) Inflammatory cause

c) Klebsiella rhinoscleromatis infection

d) Mycotic infection

Correct Answer - C

**Ans. is 'c' i.e., Klebsiellarhinoscleromatis infection**

**Rhinoscleroma**

- The causative organism is *Klebsiellarhinosclerontatisor Frisch bacillus,* which can be cultured from the biopsy material.
- The disease is endemic in several parts of world.
- In India, it is seen more often in northern than in the southern parts.
- Biopsy shows infiltration of submucosa with plasma cells, lymphocytes, *eosinophils, Mikulicz cells & Russell bodies.*
- The latter two are *diagnostic features* of the disease.
- The disease starts in the nose & extends to nasopharynx, oropharynx, larynx, trachea & bronchi.
- Mode of infection is unknown.
- *Both sexes of any age may* be affected.

## 1140. Complication of trauma to danger area of face ?

a) Cavernous sinus infection

b) Meningitis

c) Visual loss

d) Loss of memory

Correct Answer - A

**Ans. is 'a' i,e., Cavernous sinus infection**

The area of upper lip and the lower part of nose is the danger area of face. It is due to that this area is the common site of infection.

This area is drained by facial vein which communicates with the cavernous sinus through the superior ophthalmic vein and pterygoid venous plexus through the emissary vein.

In case of any infection of this area it may spread to the cavernous sinus causing infection and/or thrombosis.

## 1141. Tympanoplasty deals with reconstruction of -

a) Tympanic membrane

b) Ossicular chain

c) Both a and b

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Both a and b

- *Tympanoplasty* is the surgical operation performed for *reconstruction of tympanic membrane and/or middle ear ossicles.*
- *Myringoplasty* is the *reconstruction of tympanic membrane.*
- *Ossiculoplasty* is the *reconstruction of ossicular chain.*
- Tympanoplasty = Myringoplasty ± ossiculoplasty

## 1142. Graft for myringoplasty

a) Temporalis fascia

b) Iliacus fascia

c) Coles fascia

d) I hotibial band

Correct Answer - A
**Ans. is 'a' i.e., Temporalis fascia**
**Graft material used for myringoplasty are :**
i. *Temporalis fascia (most common)*
i. Tragal cartilage
i. *Perichondrium from the tragus*
v. Vein

## 1143. Pyriform fossa is situated in ?

a) Oropharynx

b) Hypopharynx

c) Nasopharynx

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Hypopharynx
Pyriform fossa is a part of laryngopharynx (hypopharynx)

## 1144. Most common site for carcinoma pharynx in females suffering from plummer vinson syndrome is

a) Post cricoid region

b) Posterior wall

c) Lateral wall

d) Pyriformis fossa

Correct Answer - A

**Ans. is 'a' i.e., Post cricoid**

**Plummer-Vinson syndrome**

- Plummer-Vinson syndrome, also known as Brown-Kelly-Paterson syndrome or sederopenic dysphagia, seen in middle aged edentulous women.
- The plummer Vinsion Paterson Brown Kelly Syndrome is characterized by : -
- *Dysphagia*
- *Chronic iron deficiency anemia*
- *Atrophic oral mucosa and glossitis*
- *Brittle, spoon-shaped fingernails (Koilonychia)*
- The cause of dysphagia is usually a *cervical esophageal web,* but abnormal pharyngeal and esophageal motility may play a role.
- The syndrome characterstically occurs in *middle aged edentulous* (without teeth) women.
- It is *a premalignant lesion.* Approximately 10% of patient develop *squamous cell Ca* of esophagus, oral cavity or the hypopharynx.
- As iron-deficiency anemia is a common finding, it is also known as *sideropenic dysphagia.*

- *Carcinoma develops in post-cricoid region.*

## 1145. Turban epiglottis is seen in ?

a) TB

b) Leprosy

c) Laryngeal papilloma

d) Epiglottitis

Correct Answer - A
Ans. is 'a' i.e., TB
**Tubercular larvn_gitis**

- Tubercular laryngitis is almost always secondary to pulmonary lesions, mostly affecting males in middle age (20-40 years). Disease affects the posterior third of larynx more commonly than anterior part.The parts affected in descending order of frequency are :- i) Interarytenoid fold, ii) Ventricular band, iii) Vocal cords, iv) Epiglottis
- Clinical features
- Weakness of voice with periods of aphonia earliest symptoms. o Hoarsness, cough, dysphagia (odynophagia)
- Referred otalgia
- Laryngeal examination in TB laryngitis
- Hyperaemia of the vocal cord in its whole extent or confined to posterior part with impairment of adduction is the first sign.
- Swelling in the interarytenoid region giving a mammilated appearance.
- Ulceration of vocal cord giving mouse-nibbled appearance.
- Superficial ragged ulceration on the arytenoids and interarytenoid region.
- Granulation tissue in interarytenoid region or vocal process of arytenoid.
- Pseudoedema of the epiglottis "turban epiglottis".

- Swelling of ventricular bands and aryepiglottic folds.
- Marked pallor of surrounding mucosa.

## 1146. Another name for oral thrush is ?

a) Candidiasis

b) Herpangina

c) Vincent's infection

d) Hand foot and mouth disease

Correct Answer - A
**Ans. is 'a' i.e., Candidiasis**
**<u>Oral thrush</u>**

- Also called: **oral candidiasis**
- It is the fungal infection of the oral cavity. It is caused by candida albicans.
- It manifests as greyish white patches on the oral mucosa and tongue.\When wiped off it leaves an erythematous mucosa.
- This is more common in infants and children. Adults suffering fro diabetes, malignancy, taking broad spectrum oral antibiotics, radiation, cytotoxic drugs or steroids can also be affected.
- It is treated by topical application of nystatin or clotrimazole.
- Chronic Hypertrophic Candidiasis (Candidial Leukoplakia)
- Appears as a white patch in the oral cavity which cannot be wiped off.
- It mostly affects the anterior buccal mucosa just behind the angle of mouth.
- It is treated by excision of the lesion.

## 1147. BSGT stands for ?

a) Bagolini striated glasses test

b) Bagolini smooth glasses test

c) Bagolini shiny glasses test

d) Bagolini second glue test

Correct Answer - A
Ans. is 'a' i.e., Bagolini striated glasses test
Bagolini striated glasses test, or BSGT, is a subjective clinical test to detect the presence or extent of binocular functions and is generally performed by an orthoptist. It is mainly used in strabismus clinics.

## 1148. Melanocytes in conjunctiva are derived from ?

a) Neural ectoderm

b) Surface ectoderm

c) Mesoderm

d) Neural crest

Correct Answer - D
Ans. is 'd' i.e., Neural crest

## 1149. Density of cells in adult corneal endothelium ?

a) 2000 cells/mm2

b) 3000 cells/mm2

c) 4000 cells/mm2

d) 5000 cells/mm2

Correct Answer - B
Ans. is 'b' i.e., 3000 cells/mm2
The cell density of corneal endothelium is around 3000 cells/mm2 in young adults, which decreases with the advancing age.

## 1150. No movement of Red reflex in retinoscopy -

a) No refractive error

b) Myopia of 3D

c) Myopia of ID

d) Hypermetropia

Correct Answer - C

**Ans. is 'c' i.e., Myopia of ID**

**Retinoscopy**

- Retinoscopy, also called *skiascopy* or *shadow test,* is an objective method of finding out the error of refraction by the method of neutralization.
- Retinoscopy is based on the fact that when a light is reflected from a mirror into the eye, the direction in which the light will travel across the pupil will depend upon the refractive state of the eye.
- With the help of a retinoscope, light is thrown onto the patient's eye and through a hole in the retinoscope's mirror the examiner observes of red reflex in the pupillary area of the patient.
- Then the retinoscope is moved in horizontal the vertical meridia keeping a watch on red reflex, which also moves when the retinoscope is moved.

## 1151. Maximum refractive index ?

a) Cornea

b) Air

c) Lens

d) Vitreous

Correct Answer - C
Ans. is 'c' i.e., Lens
.. Refractive index of various eye parts
.. Cornea-1.376
2. Aqueous humor-1.336
3. Lens(from cortex to core)-1.386-1.406
4. Vitreous humor-1.336
2. How to memorise!
a. The refractive index depends upon the optical density
.. Aqueous and vitreous being fluids have low density-
have **low** refractive index.
2. Cornea is less optically dense than lens.(cornea is thinner than lens!)
b. So remember 4 values
.. **i. 1.336-aqueous/vitreous**
2. **ii. 1.376-cornea**
3. **iii. 1.386-cortex of lens**
4. **iv. 1.406-core or centroid of lens**
c. Also remember,the refractive index of the anterior surface of lens is greater than the posterior surface.

## 1152. Imbert-Fick law is associate with ?

a) Schiotz tonometry

b) Applanation tonometry

c) Pachymetry

d) Keratometry

Correct Answer - B

**Ans. is 'b' i.e., Applanation tonometry**

**Applanation tonometry**

- The concept of applanation tonometry was introduced by Goldmann is 1954. It is based on Imbert- Fick lawwhich states that the pressure inside a sphere (P) is equal to the force (W) required to flatten its surface divided by the area of flattening (A); i.e., P = W/A.

## 1153. Corneal endothelial cell count is measured by ?

a) Specular microscope

b) Ophthalmoscope

c) Synoptophore

d) Amsler's grid

Correct Answer - A
Ans. is 'a' i.e., Specular microscope
Corneal endothelium is examined with specular microscope, which allows a clear morphological study of endothelial cells including photographic documentation.
The cell density of endothelium is around 3000 cells/mm2 in young adults, which decreases with advancing age.

## 1154. Quantification of corneal sensation is done by ?

a) Pachymeter

b) Keratometer

c) Aesthesiometer

d) Tonometer

Correct Answer - C

**Ans. is 'c' i.e., Aesthesiometer**

**Measurement of Corneal Sensitivity**

- Corneal sensitivity may be tested by touching it in various places with a wisp of cotton-wool twisted to a fine point and comparing the effect with that on the other, normal cornea. There is in general a brisk reflex closure of the lids.
- Corneal sensations are often diminished after any gross disorder, but the change is of diagnostic significance in certain cases, particularly herpes keratitis where minimal corneal changes are accompanied by a gross diminution of sensation.
- Quantification of the corneal sensation is possible to some degree by the use of a corneal aesthesiometer in which a single horse hair of varying length is used instead of a wisp of cotton-wool. The longest length which induces blinking is a measure of the threshold of corneal sensitivity.

## 1155. Amsler's grid is used to evaluate ?

a) Central 10 degress of vision

b) Central 20 degrees of vision

c) Peripheral vision

d) Lens opacity

Correct Answer - A
Ans. is 'a' i.e., Central 10 degress of vision
Metamorphopsia is a phenomenon wherein the patient perceives objects to have an altered, irregular contour or shape. For example, graph paper lines may be bent or obscured in areas.
This can be reviewed for any changes over time using an Amsler grid, which tests the central 10° of vision.
It is associated with diseases affecting the macula such as central serous choroidopathy, age- related macular degeneration, diabetic macular oedema and macular hole.

## 1156. Objective methods for checking the refractive error are all except

a) Ophthalmoscopy

b) Retinoscopy

c) Refractometry

d) Keratometry

Correct Answer - A
Ans. is 'a' i.e., Ophthalmoscopy
The procedure of determining and correcting refractive errors is termed as *refraction.* The refraction comprises two complementary methods : ?
*A)* Objective methods : Objective methods of refraction include :- (i) Retinoscopy, (ii) *Refractometry,* (iii) *Keratometry.*
B) Subjective methods : These are :- (i) Subjective verification of refraction, (ii) Subjective refining of refraction, (iii) Subjective binocular balancing.

## 1157. Floaters are seen in following except ?

a) Vitreous hemorrhage

b) Retinal detachment

c) Uveitis

d) Acute congestive glaucoma

Correct Answer - D

**Ans. is `d' i.e., Acute congestive glaucoma**

**Floaters**

- A floater is something in the fluids of the eye that casts a shadow on the retina and looks like a dark spot or spots floating around in the field of vision. Floaters are usually described by patients, as small, semitranslucent particles of varying shapes moving across the visual field with the movement of the eye. Floater can only be seen with the eyes open and in a lighted environment. Floaters are usually grey or black, since they are actually shadow on the retina.

**Causes of floaters are :-**

i. *Posterior vitreous detachment (PVD)*
i. *Bleeding (vitreous hemorrhage)*
i. *Retinal detachment*
*. *Inflammation of eye (uveitis)*
*. *High myopia*

## 1158. Newborn eye is ?

a) Myopic

b) Hypermetropic

c) Presbyopic

d) None of the above

Correct Answer - B

**Ans. is 'b' i.e., Hypermetropic**

**Eye at birth**

- *Anteroposterior diameter* of eye ball is about 16.5 mm (70% of adult size). Adult size is attained by 7-8 years.
- *Corneal diameter* is about 10 mm. Adult size (11.7 mm) is attained by 2 years of age.
- *Anterior chamber* is shallow and angle is narrow.
- *Lens* is spherical at birth.
- Retina :- Apart from macular area, the retina is fully differentiated. Macula differentiates 4-6 months after birth.
- Myelination of optic nerve fibres has reached the lamina cribrosa.
- New born *is* usually hypermetropic by +2 to +3D.
- Orbit is more divergent (50°) as compared to adult (45°).
- *Lacrimal gland* is still underdeveloped and tears are not secreted.

## 1159. Gaze fixation takes place at which age ?

a) 3 months

b) 6 months

c) 1 year

d) 2 years

Correct Answer - B
Ans. is 'b' i.e., 6 months
Gaze Fixation starts developing in the first month and is completed in 6 months.
Macula is fully developed by 4 - 6 months.
Fusional reflexes, stereopsis and accommodation is well developed by 4 - 6 months.
Cornea attains normal adult diameter by 2 years of age.
Lens grows throughout life.

## 1160. Subconjunctival cyst is seen in?

a) Toxoplasmosis

b) Cysticercosis

c) Leishmaniasis

d) Chaga's disease

Correct Answer - B
Ans. is b i.e., Cysticercosis
Parasitic cysts occurs in *subconjunctival cysticercus,* hydatid cyst and filarial cyst.

# 1161. Cause of blindness in pterygium ?

a) Astigmatism

b) Loss of visual axis

c) Cataract

d) Limitation of ocular movements

Correct Answer - A
**Ans. is 'a' i.e., Astigmatism**
**<u>Ptervgium</u>**

- Pterygium is a *non-cancerous (non-neoplastic) growth* of conjunctiva, characterized by a *wing-shaped fold* of conjunctiva encroaching upon the cornea from either side within the interpalpebral fissure. Pterygium is always situated in the palpebral aperture.
- Pathologically *Pterygium is a degenerative and hyperplastic condition of conjunctiva.* The subconjunctival tissue undergoes elastotic degeneration *and proliferates as vascularized granulation tissue* under the epithelium, which ultimately encroaches the cornea. The corneal epithelium, Bowman's layer and stroma are destroyed.

**Etiology & Clinical features**

- Pterygium is more common in people with excess outdoor exposure to sunlight (UV rays), dry heat, high wind and abundance of dust. Therefore it is more common in those who work outdoors.
- Clinically it presents as a *triangular fold* of conjunctiva encroaching the cornea in the area of palpebral **aperture,** usually on the *nasal side.* Other findings are *stocker's line* (deposition of iron)
- Ptergyium is an *asymptomatic condition* in the early stages, except for *cosmetic intolerance. Visual disturbance or corneal astigmatism* may occur. Visual **disturbances are due to encroachment of**

**pterygium on pupillary area or corneal astigmatism.**
*Occasionally diplopia* may occur due to limitation of ocular movements.

**Treatment**

- Asymptomatic pterygium which is not progressive is best left alone. **Surgical excision is the only satisfactory treatment** and is indicated for : - (1) Cosmetic reasons, (2) Continued progression threatening to encroach onto the pupillary area (once the pterygium has encroached pupillary area, wait till it crosses on the other side), (3) Diplopia due to interference in ocular movement.

## 1162. What is the most common problem following surgical treatment of pterygium?

a) Recurrence

b) Corneal ulceration

c) Astigmatism

d) Scleral scarring

Correct Answer - A

**Ans. is 'a' i.e., Recurrence**

**Surgical excision of pterygium is its only satisfactory treatment and is indicated for ?**

1. Cosmetic reasons
2. Continued progression threatening to encroach onto the pupillary area (once the pterygium has encroached pupillary area, wait till it crosses on the other side)
3. Diplopia due to interference in ocular movements.

- *Recurrence* of the pterygium after surgical excision is the most common problem after pterigium excision and is seen in 30 - 50 % of the cases.
- The post operative complications of pterigium surgery are:

1. Recurrence (most common)
2. Others : Bleeding, corneal thinning, scarring, fornix loss, symblepharon formation, rectus muscle injury, wound dehiscence, dellen formation, graft chemosis, conjunctival granuloma, epithelial inclusion cysts, astigmatism etc.

## 1163. Cause of blindness in trachoma ?

a) Scarring

b) Pannus

c) Chronic dacrocystitis

d) Entropion

Correct Answer - A
**Ans. is 'a' i.e., Scarring**
The later structural changes of trachoma are referred to as "cicatricial trachoma".
These include scarring in the eyelid (tarsal conjunctiva) that leads to distortion of the eyelid with buckling of the lid (tarsus) so that eye lashes rub on the eye (trichiasis).
**Rubbing of eye lashes of scarred eye lids against the cornea leads to corneal opacities and scarring and then to blindness.**
Thus actual cause of blindness is **corneal opacity and scarring,** which may be secondary to **eyelid scarring.**

## 1164. Angular conjunctivitis is caused mainly by

a) Moraxella axenfeld

b) Staphylococcus aureus

c) Streptococcus pneumonae

d) Pseudomonas aeruginosa

Correct Answer - A

**Ans. is 'a' i.e., Moraxella axenfeld**

**Angular conjunctivitis (diplobacillary conjunctivitis)**

- It is a type of chronic conjunctivitis characterized by mild grade inflammation confined to conjunctiva and lid margins near the angles associated with maceration of the surrounding skin.
- *Moraxella axenfeld (Moraxella lacunata),* a diplobacillus, is the commonest causative organism.
- Less commonly, *staphylococcus aureus* can also cause angular conjunctivitis.
- **Source of infection**: Nasal tract of healthy people and the nasal discharge of patients with angular conjunctivitis.
- It spreads from the nasal cavity to the eye by contaminated hands and handkerchief.
- Angular conjunctivitis responds to tetracycline ointment, Oxytetracycline for 10 to 14 days.
- *Eye drops containing zinc* inhibit the proteolytic ferment and are of great value although less rapidly effective, and may be used in addition to tetracycline.

## 1165. Keratitis is caused by ?

a) Bacteria

b) Atopy

c) Protozoa

d) All

Correct Answer - D
**Ans. is 'd' i.e., All**
**Causes of keratitis**
1. *Infective keratitis*
a. Bacterial
b. Viral
c. Fungal
d. Chlamydial
e. Protozoal
f. Spirochaetal
2. *Allergic keratitis*
a. Phlyctenular keratitis
b. Vernal keratitis
c. Atopic keratitis
3. *Trophic keratitis*
a. Exposure keratitis
b. Neuroparalytic keratitis
c. Keratomalacia
d. Atheromatous ulcer
4. *Keratitis associated with diseases of skin and mucous membrane.*
5. *Keratitis associated with systemic collagen vascular disorders.*
6. *Traumatic keratitis,* which may be due to mechanical trauma, chemical trauma, thermal burns, radiations.

7. *Idiopathic keratitis e.g.,*

a. Mooren's corneal ulcer
b. Superior limbic keratoconjunctivitis
c. Superficial punctate keratitis of Thygeson

## 1166. Munson's sign is a feature of ?

a) Keratoconus

b) Corneal ulcer

c) Pterygium

d) Posterior staphyloma

Correct Answer - A

**Ans. is 'a' i.e., Keratoconus**

**Kerotoconus**

- Keratoconus is a *progressive, noninflammatory, bilateral* ectatic corneal disease, characterizedparaxia/stromal *thinning* and weakening that leads to corneal surface distortion.
- *Essential pathological changes are thinning and ectasia* which occur as a result of defective synthesis of mucopolysaccharide and collagen tissue.
- It usually starts at puberty and progresses slowly.
- Symptoms usually begins as blurred vision with shadowing around images.
- Vision becomes progressively more blurred and distorted with associated glare, halos around lights, light sensitivity and ocular irritation.
- *Visual loss occurs primarily from irregular astigmatism and myopia, and secondarily from corneal scarring.* o The hallmark of keratoconus is *central or paracentral stromal thinning, apical protrusion of anterior corneaand irregular astigmatism.*
- The cornea thins near the centre and progressively bulges forwards, with the apex of cone always being slightly below the centre of the cornea.

**Important findings an examination are -**

*i) Distarted window reflex (Corneal reflex)e.*
*ii) Fleisher's rine.*
*iii) Yawning reflex (Scissor reflex).*
*iv) Oil drop reflex.*
*v) Munson's signs*

**Treatment includes :?**

1) Spectacles for regular or mild irregular astigmatism.
2) Rigid gas permeable contact lens for higher astigmatism.
3) Epikeratoplasty in patients intolerant to lens and without significant corneal scarring.
4) Keratoplasty penetrating or deep lamellar if there is significant corneal scarring.

## 1167. Safe size of corneal graft with less chances of failure is ?

a) 7·5 mm

b) 6·5 mm

c) 5·5 mm

d) 4·5 mm

Correct Answer - A

**Ans. is 'a' i.e., 7·5 mm**

Correlation of corneal graft diameter and chances of graft failure

Increased corneal graft size has been reported in some studies to be a significant risk factore for graft rejection.

Other studies refute this and point to smaller graft size as more likely to be rejected.

There is increased risk of rejection and endothelial failure in small grafts with recipient size < 7mm and also increased risk of rejection in large grafts with graft size > 8·5 mm.

Thus the corneal graft with graft diameter between 7 and 8·5 mm has more chances of survival.

## 1168. Koeppe's nodules are type of ?

a) Granulomatous uveitis

b) Non granulomatous uveitis

c) Coroiditis

d) Pars planitis

Correct Answer - A

**Ans. is 'a' i.e., Granulomatous uveitis**

**Nodules on the iris surface. These are observed in granulomatous uveitis (Koeppe's and Busacca's nodules), melanoma, tuberculoma and gumma of the iris**

**Iris nodules**

There are many types of nodules that develop on iris in *granulomatous uveitis :-*

i. *Keoppe nodule :-* Seen at pupillary margin.
i. *Busacca's nodule :-* Seen on the peripheral part of anterior surface of iris.
i. *Tubercular nodules :-* Scattered throughout the iris and ciliary body, mostly in stroma. They are more common at pupillary margin.
*. *Syphilitic nodules :-* At pupillary margin.
*. *Sarcoid nodules :-* At pupillary margin or in the stroma of the iris.

## 1169. Pars planitis is ?

a) Anterior uveitis

b) Intermediate uveitis

c) Posterior uveitis

d) Pan uveitis

Correct Answer - B

**Ans. is b i.e., intermediate uveitis**

**Uveitis**

- Uveitis refers to the inflammation of uveal tissue.
- However, practically there is always some associated inflammation of the adjacent structures such as retina, vitreous, sclera and cornea.
- Due to close relationship between the anatomically distinct part of the uveal tract, the inflammatory process usually involve the uvea as a whole and are generally not limited to a single part.
- However, the uveitis is classified according to the part of uvea which is clinically more affected. For example, the term iritis is used when iris appears to be more affected.

Anatomical classification of uveitis

1. *Anterior uveitis.* It is inflammation of the uveal tissue from iris up to pars plicata of ciliary body. It may be subdivided into -

- *Iritis,* in which inflammation predominantly affects the iris.
- *Iridocyctitis* in which iris and pars plicata part of ciliary body are equally involved, and
- *Cyclitis,* in which pars plicata part of ciliary body is predominatly affected.

*2. Intermediate uveitis.* It includes inflammation of the pars plana and peripheral part of the retina and underlying `choroid'. It is also

called *'pars planitis'.*
*3. Posterior uveitis.* It refers to inflammation of the choroid (choroiditis). Always there is associated inflamation of retina and hence the term `*chorioretinitis'* is used.
*4. Panuveitis.* It is inflammation of the whole uvea.

## 1170. Anterior uveitis earliest lesion ?

a) Aqueous flare

b) Keratic precipitates

c) Circumcorneal congestion

d) Blurring of vision

Correct Answer - A

Ans. is 'a' i.e., Aqueous flare

Aqueous flare is the earliest sign of acute anterior uveitis.

- Keratic precipitates is the pathognomic sign of acute anterior uveitis

**Clinical features of acute anterior uveitis**

- Acute anterior uveitis is the most common form of uveits, accounting for 60-70% of cases. It is characterized by *sudden onset and duration less than* 3 *months.* Presentation is typical with sudden onset of *unilateral pain, photophobia, redness, lacrimation and blepherospasm.* Vision may be normal initially. However, later there may be distrubance in vision due to ciliary spasm (induced myopia), corneal haze (due to edema & 1($1^3$s) and aqueous turbidity.

**External examination shows following signs :-**

i. Circumcorneal (ciliary) congestion Which has a violaceous hue.
i. Corneal edema, posterior corneal opacities.
i. *Keratic precipitates (KPs):-* are proteinaceous cellular deposits at the back of cornea on endothelium.
*. *Anterior chamber signs :-* Aqueous cells, Aqueous flare, hypopyon, hyphaemia (in hemorrhagic uveitis), deep anterior chamber (If posterior synachiae occurs).
*. *Iris signs :-* Blurred & indistinct iris, i.e. *muddy iris,* instead of being clear and sharply defined.
i. *Papillary signs :-* Narrow (miotic) pupil, irregular pupil due to

segmental posterior synechiae which gives festooned appearance *(festooned pupil)* when dilated with atropine, sluggish pupillary reaction, ectropion pupillae (evertion of pupillary margins), occlusio pupillae (due to complete occlusion of pupil by organised exudate).

## 1171. Which of the following indicates activity of anterior uveitis?

a) Cells in anterior chamber

b) Circumcorneal congestion

c) Keratic precipitate

d) Corneal edema

Correct Answer - A
Ans. is 'a' i.e., Cells in anterior chamber

- Activity of acute anterior uveitis is indicated by presence of cells (aquous cells) and flare in anterior chamber → Grading is done on these two.

| Grade | Aquous cells | Grade | Aquous flare |
|---|---|---|---|
| | 0 cells | 0 | no flare |
| +_ | 1-5 cells | +1 | Just detectable |
| +1 | 6-10 cells | +2 | Moderate flare |
| +2 | 11-20 cells | +3 | Marked flare |
| +3 | 21-50 cells | +4 | Intense flare |
| +4 | > 50 cells | | |

**1172.** **Which of the following condition is associated with the development of posterior staphyloma?**

a) Pathological myopia

b) Retinoblastoma

c) Acid injury

d) Sympathetic ophthalmia

Correct Answer - A
Posterior staphyloma, the posterior outpouching of the wall of the eye, is an important component of the diagnosis of pathologic myopia; indeed, it is one of the hallmarks of pathologic myopia. With the exception of inferior staphyloma related to tilted disc syndrome, it does not occur in pathologies other than pathologic myopia.
Thus, the presence of staphyloma is specific to pathologic myopia and critically important in differentiating simple school myopia with good best corrected visual acuity (BCVA) and pathologic myopia that could cause the loss of BCVA.

## 1173. Following is feature of Fusch's hetero chromic iridocyclitis ?

a) Heterochromia of iris

b) Keratic precipitates

c) Posterior subcapsular cataract

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

**Fuch's heterochromic iridocyclitis (Fuch's uveitis syndrome)**

It is a form of anterior and intermediate uveitis.

The condition is usually unilateral and chronic in nature and is characterized by a *chronic non-granulomatous uveitis* and eventually results in *iris heterochromia* (a change in the colour of iris).

**The disease has following characteristic features :**

i) Heterochromia of iris

ii) Diffuse stromal iris atrophy

iii) Fine KPs at back of cornea

iv) Faint aqueous flare

v) Absence of posterior synechiae

vi) A fairly common rubeosis iridis, sometimes associated with neovascularisation of the angle of anterior chamber.

*vii)* Comparatively early development of complicated cataract and secondary glaucoma (usually open angle type). *Glaucoma has been reported in 10-59% of cases.*

**Treatment**

Fuch's heterchromic uveitis *responds variable to steroids and cycloplegics.* The complications of long term use of these drugs may at times outweigh their potential benefits. Therefore, treatment with

topical steroids is given to iritis which is sufficiently active to require the treatment, otherwise the patient is routinely followed without giving any treatment.
*Cataract responds well to most forms of intraocular surgeries,* including the standard IOL implantation. *Hyphemia may occur because of rubeosis iridis (neovascularization of iris).*
Glaucoma control may be somewhat more problematic, with surgical options indicated for later forms of disease

## 1174. Recurrent non-granulomatous uveitis is seen in?

a) Vogt koyanagi-Harada syndrome

b) Posner-Schlossman syndrome

c) Tuberculosis

d) Sarcoidosis

Correct Answer - B

**Ans. is `b' i.e., Posner-Schlossman syndrome**

**Glaumatocyclic crisis**

Glamatocyclitic crisis (Posner - Schlossman syndrome) is a unilateral recurrent non- granulomatous iritis that is associated with an elevated ocular pressure during the attacks. This self- limiting condition tends to occur in persons during the third to sixth decade and the visual fields, the optic nerve head, and anterior chamber angle are normal. A mild inflammatory reaction is very rarely present as evidenced by a few keratic precipitates on the posterior surface of the cornea. The cause of the glaucoma remains unknown, but a trabeculitis is suspected. Many patients (55%) subsequently develop open angle glaucoma.

**1175.**

## Optic canal is a part of ?

a) Lesser wing of sphenoid

b) Greater wing of sphenoid

c) Ethmoid

d) Pterygoid

Correct Answer - A
Ans. is 'a' i.e., Lesser wing of sphenoid
The optic nerve leaves the orbit is the optic canal to enter the cranial vault.
The optic canal is the most posterior landmark of the orbit. It measures 10 mm in length.
The thin piece of bone separating the optic canal from the superior orbital fissure is the optic strut.
The optic strut and optic canal are a part of the lesser wing of sphenoid bone.

## 1176. Treatment of presbyopia is by use of which lens?

a) Convex

b) Concave

c) Biconcave

d) Concavoconvex

Correct Answer - A
**Ans. is 'a' i.e., Convex**
**<u>Presbyopia</u>**

- Presbyopia is a vision condition in which the crystalline lens of eye loses its flexibility, which make it difficult to focus on the objects closer to the eye. Presbyopia is not an error of refraction but a condition of physiological insufficiency of accommodation leading to a progressive fall in near vision. Presbyopia is an *age related problem,* therefore also called eye sight of old age.
- Symptoms are usually seen *after 40 years of age.*
- Presbyopia is not a disease, rather a natural part of the aging process of the eye.
- The treatment of presbyopia is the prescription of appropriate convex glasses for near work.

## 1177. Gland of Moll opens in/on the ?

a) Skin

b) Hair follicle

c) Tarsal plate

d) Ducts of Meibomian glands

Correct Answer - B

**Ans. is 'b' i.e., Hair follicle**

**GLANDS OF EYELIDS :**

i. *Meibomian glands :* These are also known as *tarsal glands* and are present in the stroma of tarsal plate arranged vertically. They are modified sebaceous glands. Their ducts open at the lid margin. Their secretion constitutes the oily layer of the tear film.

i. *Glands of Zeis :* These are also sebaceous glands, which open into the follicles of eyelashes.

i. *Glands of Moll :* These are modified sweat glands situated near the hair follicle. They open into the hair follicles or into the ducts of Zeis glands. They do not open directly onto the skin surface or elsewhere.

. *Accessory lacrimal glands of Wolfring :* These are present near the upper border of the tarsal plate.

## 1178. All are true about Bullous keratopathy except ?

a) Seen in Macular dystrophy

b) Treatment is lamellar kertoplasty

c) Lenses can be prescribed for such patients

d) Seen in Fuch's dystrophy

Correct Answer - A

**Ans. is 'a' i.e., Seen in Macular dystrophy**

**Fuch's epithelial - endothelial dystrophy**

Fuch's dystrophy-slowly progressive bilateral condition affecting females more than males. Primary open angle glaucoma is associated with this condition.

Stages and clinical features

i) Stage of cornea guttata

- Hassal - Henle type of excrescences in the central part of cornea.
- A gradual increase of central guttae with peripheral spread and confluence gives rise to the so called 'beaten - metal' appearance.
- This stage is asyptomatic.

ii) Oedematous stage or Stage of endothelial decompensation

- Early stromal edema and epithelial dystrophy
- Patients complain of blurring of vision.

iii) Stage of Bullous keratopathy

- Follows long standing stromal edema
- Marked epithelial edema with formation of bullae, which when rupture cause pain, discomfort and irritation with associated decreased visual acuity.

iv) Stage of scarring

- Cornea becomes opaque and vascularized.

- May be complicated by secondary infection or glaucoma.

**Treatment**

i. Edematous stage : 5% Sodium chloride (Hypertonic saline)
i. Bullous keratopathy: Bandage soft contact lenses.
i. Penetrating kertaoplasty : treatment of choice.

## 1179. All of the following has HLAB27 associated with uveitis except ?

a) Ankylosing spondylitis

b) Reiters syndrome

c) Behcets syndrome

d) None of the above

Correct Answer - C
**Ans. is 'c' i.e., Behcets syndrome**
**A few examples of HLA-associated diseases with uveitis are as follows :**
i) HLA-B27 : Acute anterior uveitis associated with ankylosing spondylitis and also in Reiter's syndrome.
ii) HLA-B5 : Uveitis in Behcet's disease.
iii) HLA-DR4 and DW15 : Vogt Koyanagi Harada's disease.

## 1180. Fundus in retinitis Pigmentosa is ?

a) White spots with red disc

b) Jet- black spots with pale-waxy disc

c) No pigmentation

d) Dilatation of arterioles

Correct Answer - B

**Ans. is 'b' i.e., Jet- black spots with pale-waxy disc**

**<u>Examination findings in retinitis pigmentosa</u>**

*Ophthalmoscopic findings* are characteristic and include :-

i. *Retinal pigmentary changes (Bone spicule intraneural retinal pigmentation) :* - Retina studded with small, **jet-black spots** resembling **bone corpuscles** with a spidery outline. These pigmentary changes are typically **perivascular** and *retinal veins (never arteries)* have a sheath of pigment for part of their course. These changes affect *equatorial region initially* sparing the posterior pole and periphery. Later in the course of disease whole retina is involved.

i. **Attenuated and thread like retinal arterioles and veins.**

i. **Pale and waxy optic disc** (consecutive optic atrophy).

. Thinning and atrophy of retinal pigment epithelium (RPE) in mid and far peripheral retina with relative sparing of RPE at macula.

**Electroretinogram (ERG) and particularly the electro-oculogram (EOG) are markedly subnormal.**

## 1181. Vitreous hemorrhage produces ?

a) Sudden painless loss of vision

b) Sudden painful loss of vision

c) Gradual painless loss of vision

d) Gradual painful loss of vision

Correct Answer - A
Ans. is 'a' i.e., Sudden painless loss of vision

## 1182. What is the immediate management of vitreous hemorrhage in eye ?

a) No treatment

b) Steroids

c) Antibiotics

d) Vitrectomy

Correct Answer - A

**Ans. is 'a' i.e., No treatment**

**Treatment of vitreous haemorrhage :**

1. Conervative treatment : Bed rest, elevation of patient's head and bilateral eye patches. This will allow the blood to settle down.
2. Treatment of the cause : Once the blood settles down, indirect ophthalmoscopy should be performed to locate and further manage the causative lesion such as a retinal break, phlebitis, prolifrative retinopathy, etc.
3. Vitrectomy by pars plana route should be considered to clear the vitreous, if the haemorrhage is not absorbed after 3 months.

## 1183. Cherry red spot is seen in ?

a) Niemann - Pick's disease

b) Tay Sach's disease

c) Central retinal artery occlusion

d) All of the above

Correct Answer - D
**Ans. is 'd i.e., All of the above**
**Causes of cherry red spot**

- GM2 gangliosidoses (Tay sachs & sandhoff)
- Hurler's syndrome
- GM1 gangliosidoses
- Cryoglobulinemia
- Niemann - Pick's disease
- Laber's congenital amaurosis
- Gaucher's disease
- Sialidosis (galactosialidosis)
- Metachromatic leukodystrophy
- Mucopolysacharidosis VII
- Central retinal artery occlusion (CRAO)
- Multiple sulfatase deficiency
- Trauma (Berlin's edema / commotio retinae)
- Poisoning :- Carbon mono-oxide, methanol
- Quinine and Dapsone
- Shprintzen-Goldberg syndrome
- Farber's disease
- Hallervorden Spatz disease
- Goldberg's disease
- Rarely in krabbe's disease

## 1184. Retinal detachment occurs between

a) Layers of neurosensory retina

b) Neurosensory retina and pigment epithelium

c) Pigment epithelium and choroid

d) None of the above

Correct Answer - B

Ans. is 'b' i.e**.,** Neurosensory retina and pigment epithelium

- Retina has total ten layers from with out inward :- (i) Pigmented epithelium, (ii) Layers ofRods & cones, (iii) External limiting membrane, (iv) Outer nuclear layer, (v) Outer plexiform layers, (vi) Inner nuclear layer, (vii) Inner plexiform layer, (viii) Ganglionic cell layer, (ix) Nerve fibre layer, (x) Internal limiting membrane
- Broadly these layers are subdivided into two layers based on the function :?
- Neurosensory layer or sensory layer (containing layers ii to x of above 10 layers) :- for vision.
  **Pigmented epithelium (layer i) :-** Provide metabolic support to neurosensory layer and acts as an antireflective layer.
- So, inner layers are included in neurosensory layer and outer most layer is retinal pigmented epithelium(RPE).
- Retinal detachment is a disorder of eye in which retina peels away from its underlying layer of support tissue. Usually
- 
- there is separation between the neuroepithelium (neurosensory epithelium or sensory epithelium) and the pigmented
- layer, because there is a potential space between these two layers where fluid can accumulates and can cause separation.

## 1185. Retinal tears seen most commonly seen in ?

a) Primary retinal detachment

b) Secondary retinal detachment

c) Tractional retinal detachment

d) Exudative retinal detachment

Correct Answer - A

**Ans. is 'a' i.e., Primary retinal detachment**

Retinal detachment is a disorder of eye in which retina peels away from its underlying layer of support tissue. Usually there is separation between the neuroepithelium (neurosensory epithelium) and the pigmented layer.

**The retinal separation is divided into:**

1. Primary :- Rheugmatogenous retinal detachment.
2. Secondary :- Tractional retinal detachment and exudative retinal detachment.

**Rhegmatogeneous retinal detachment**

- This is the commonest type of retinal detachment. This is due to a retinal break/tear/hole which allows the liquid vitreous to seeps into the subretinal space and separates the sensory retina from the pigmentary epithelium.
- Predisposing factors include : (i) Myopia, (ii) Previous intraocular surgery : cataract extraction, (aphakia) or pseudoaphakia); (iii) Trauma; (iv) Retinal degeneration (Lattice degeneration; Snail track degeneration, Senile or degenerative retinoschisis.
- Tractional retinal detachment
- It is due to pulling on the retina usually from fibro-vascular band in the vitreous cavity, i.e., *vitroretinal band.*

- Exudative retinal detachment (solid retinal detachment)
- It occurs due to the retina being pushed away by accumulation of fluid or a neoplasm beneath the retina. This type of detachment is caused by inflammatory disorders or by tumors.

## 1186. Methanol attacks ?

a) Cones

b) Rods

c) Ganglion cells of retina

d) Germinal cell layer

Correct Answer - C
Ans. is 'c' i.e., Ganglion cells of retina
Methyl alcohol is metabolised very slowly and thus stays for a longer period in the body.
It is oxidised into formic acid and formaldehyde in the tissues. These toxic agents cause oedema followed by degeneration of the ganglion cells of the retina, resulting in complete blindness due to optic atrophy.

## 1187. Diabetic ischemic maculopathy is characterized by all except ?

a) It occurs due to microvascular blockage

b) Mild visual loss

c) Areas of non perfusion are evident on fluorescein angiography

d) Microaneurysms and hemorrhages are seen

Correct Answer - B
Ans. is `b' i.e., Mild visual loss
Ischaemic diabetic maculopathy
It occurs due to microvascular blockage.
Clinically it is characterised by marked visual loss with microaneurysms, haemorrhages, mild or no macular oedema and a few hard exudates.
Fluorescein angiography shows areas of non-perfusion which in early cases are in the form of enlargement of foveal avascular zone (FAZ), later on areas of capillary dropouts are seen and in advanced cases precapillary arterioles are blocked.

## 1188. Refsum's syndrome is associated with ?

a) Retinitis pigmentosa

b) Xerophthalmia

c) Chalcosis

d) Diabetes retinopathy

Correct Answer - A
**Ans. is 'a' i.e., Retinitis pigmentosa**
**Associations of retinitis pigmentosa**
Ocular associations : These include myopia, primary open angle glaucoma, microphthalmos, conical cornea and posterior subcapsular cataract.
Systemic associations : These are in the form of following syndromes :-
*i) Laurence-Moon-Biedl syndrome :* It is characterised by retinitis pigmentosa, obesity, hypogenitalism, polydactyly and mental deficiency.
*ii) Cockayne's syndrome :* It comprises retinitis pigmentosa, progressive infantile deafness, dwarfism, mental retardation, nystagmus and ataxia.
*iii) Refsum's syndrome :* It is characterized by retinitis pigmentosa, peripheral neuropathy and cerebellar ataxia.
*iv) Usher's syndrome :* It includes retinitis pigmentosa and labyrinthine deafness.
*v) Hallgren's syndrome : It* comprises retinitis pigmentosa, vestibulo-cerebellar ataxia, congenital deafness and mental deficiency.

## 1189. Which gas is most commonly used with pneumatic retinopathy ?

a) SF6

b) C3F8

c) $CO_2$

d) N3

Correct Answer - A
**Ans. is 'a' i.e., SF6**
Sulfur hexafluoride gas (SF6) is most commonly used with pneumatic retinopexy.

## 1190. Which antiglaucoma drug decreases aqueous formation ?

a) Prostaglandins

b) Beta - blockers

c) Mannitol

d) Pilocarpine

Correct Answer - B
Ans. is 'b' i.e., Beta - blockers

## 1191. Selective alpha 2 agoinst used in glaucoma ?

a) Tirriolol

b) Epinephrine

c) Dipivefrine

d) Brimonidine

Correct Answer - D
Ans. is 'd' i.e., Brimonidine

## 1192. Main MOA brimonidine in glaucoma ?

a) Decreased aqueous secretion

b) Increased trabecular outflow

c) Increased uveoscleral outflow

d) Reduce vitreous volume

Correct Answer - A
Ans. is 'a' i.e., Decreased aqueous secretion

## 1193. Following are the side effects of apraclonidine except ?

a) Lid dermatitis

b) Follicular conjunctivitis

c) Eye lid retraction

d) Watering of mouth

Correct Answer - D

**Ans. is 'd' i.e., Watering of mouth**

**Apraclonidine**

- Topical application lowers the intra ocular pressure by 25 %.
- It decreases aqueous production by primary alphal and subsidiary alpha 2 action in ciliary body.
- Itching, lid dermatitis, follicular conjunctivitis, mydriasis, eyelid retraction, dryness of mouth and nose are common side effects.
- Its use is restricted to short term control of spikes of intraocular tension after laser trabeculolasty or iridotomy.

## 1194. Drug kept as a last resort in the management of primary open angle glaucoma is ?

a) Latanoprost

b) Topical beta blocker

c) Brimonidine

d) Oral acetazolamide

Correct Answer - D

**Ans. is 'd' i.e., Oral acetazolamide**

**Treatment of POAG (Primary open angle glaucoma)**

**Following treatment options are available for POAG :**

Medical therapy :- Total medical therapy is the treatment of choice for POAG. Topical 13-blockers (Timolol, Betoxalol, Levobunolol, carteolol) are the drugs of choice. Topical prostaglandin analogues (Latanoprost, bimatoprost, travoprost) are the second choice drugs. Other topical drugs for POAG are:- LI *Alpha agonists* (non - selective : *epinephrine, dipivefrine;* and Selective - $a_2$: *apraclonidine, brimonidine)*

*Carbonic anhydrase inhibitors (Dorzalamide, brinzolamide) Cholinomimetic drugs (Pilocarpine, physostigmine, echothiophate, carbachol) Pilocarpire* has several drawbacks, therefore, is being considered as an adjunctive therapy only as a last resort.

**Approach to treatment of POAG**

- Start monotherapy with topical P-blocker or latanoprost.
- If target IOT is not attained either change over to the alternative drug or use both the above concurrently.
- Brimonidine/dorazolamide/dipivefrine are used only when there are

contraindications to PG analogues or 13-blockers.

- Topical miotics and oral acetazolamide are added only as the last resort.
- Systemic therapy is considered only as a last resort. Drugs used for systemic therapy are :- (i) *Carbonic anhydrase inhibitors (Acetazolamide,* Dichlorphenamide, methazolamide), (ii) *Hyperosmotic agents* (mannitol, glycerol).

## 1195. Following is a cause of secondary angle closure glaucoma ?

a) Pseudophakia

b) Corticosteroid induced

c) Angle recession glaucoma

d) Congenital glaucoma

Correct Answer - A
**Ans. is 'a' i.e., Pseudophakia**
**Causes of secondary angle closure glaucoma**

- Pupillary block: uveitis, psudophakia
- Angle fibrosis: neovascular glaucoma

## 1196. Laser used to manage after cataract: *March 2005, September 2009*

a) Excimer laser

b) Argon green laser

c) Diode laser

d) Nd:YAG laser

Correct Answer - D
Ans. D: Nd:YAG laser
The Nd:YAG laser is a solid state laser that uses a neodymium-doped yttrium-aluminum-garnet crystal as the lasing medium. It is optically pumped with a lamp or diode and most commonly emits infrared light at 1064nm. It can be used in either a pulsed or continuous mode. Pulsed YAG lasers are typically Q-switched to achieve high-intensity pulses, which can be frequency doubled to emit light at 532nm.
**There are numerous ophthalmic applications for Nd:YAG lasers.**

- They are most commonly used to treat posterior capsular opacification after cataract surgery
- To create a peripheral iridotomy in patients with narrow angles or angle-closure glaucoma.
- YAG lasers can also be used to cut the anterior capsule for capsular block syndrome and capsular phimosis
- To cut vitreous strands in the anterior chamber.
- In malignant glaucoma, disruption of the anterior hyaloid face is performed with the YAG laser
- In refractory glaucomas, these lasers can be used for cyclophotoablation of the ciliary body.

- They have also been helpful for draining premacular subhyaloid hemorrhages in patients with Valsalva retinopathy.
- Panretinal photocoagulation can be performed with frequency-doubled Nd:YAG lasers.

Other applications include the treatment of recurrent corneal erosions and vitreous floaters.

Excimer (Argon fluoride) laser is used in photorefractive keratectomy (PRK), phototherapeutic keratectomy (PTK), LASIK, LASEK

Argon green laser is used in trabeculoplasty, iridoplasty, pupillomydriasis and retinal photocoagulation Diode laser is used in retinal photocoagulation

## 1197. Phacoemulsification incision is at ?

a) Sclero-corneal junction

b) Cornea

c) Sclera

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Sclero-corneal junction**

In phacoemulsification very small 3 cmm incision is taken at the sclerocorneal junction.

**Phacoemulsification**

- It is nothing else but an advancement in the *method of doing ECCE.* Here the nucleus is converted into pulp or emulsified using high frequency sound waves, and then sucked out of the eye through a small (3.2 mm) incision. A special *foldable IOL* is then inserted into the posterior chamber through the same incision. ECCE by phacoemulsification with foldable posterior chamber IOL is the procedure of choice for cataract.
- The steps in phacoemulsification include :(i) *Corneoscleral incision,* (ii) Continuous curvilinear capsulorrhexis, (iii) Hydrodissection and hydrodelineation (iv) Emulsification and aspiration of nucleus and then cortex, and (v) Foldable IOL implantation in posterior chamber.
- Recovery with phacoemulsification is fastest as incision is very small and no sutures are taken.

## 1198. Bilateral inferior dislocation of lens is seen in ?

a) Marfans syndrome

b) Homocystinuria

c) Weil Marchesani syndrome

d) Trauma

Correct Answer - B
**Ans. is `b' i.e., Homocystinuria**
**Ectopia lentis**

- Ectopia lentis is defined as displacement or malposition of the crystalline lens of the eye. The lens is considered dislocated (luxated) when it lies completely outside the lens patellar fossa. The lens is described as subluxated when it is partially displaced but contained within the lens space.

## 1199. Lens dislocation in marfans syndrome is -

a) Superotemporal

b) Inferonasal

c) Forward

d) Backward

Correct Answer - A
Ans. is 'a' i.e., Superotemporal

## 1200. Diabetic cataract is due to accumulation of:

***March 2009***

a) Fructose

b) Galactose

c) Glucose

d) Sorbitol

Correct Answer - D
Ans. D) Sorbitol
The enzyme aldose reductase (AR) catalyzes the reduction of glucose to sorbitol through the polyol pathway, a process linked to the development of diabetic cataract.

## 1201. Cataract is cases of diabetes mellitus is due to accumulation of ?

a) Glycated crytallins

b) Calcified crystallins

c) Glycated fibrillins

d) Calcified fibrillins

Correct Answer - A

**Ans. is 'a' i.e., Glycated crytallins**

**Diabetic cataract**

Senile cataract tends to develop at an earlier age and more rapidly than usual in diabetic subjects. The lenses of an adult diabetic are said to be in the same condition as a non-diabetic who is 15 years older. In diabetic adults, coin- pared to non-diabetics, cataracts are more prevalent, are dependent on the duration of diabetes and progress more rapidly. The mechanisms are believed to be glycation, carbamylation of crystallins and increased oxidative damage.

*True diabetic* cataract is a rare condition occurring typi- cally in young people in whom the diabetes is so acute as to disturb grossly the water balance of the body. A large number of fluid vacuoles appear under the anterior -td posterior parts of the capsule, initially manifesting as myopia and then producing a diffuse opacity which at this stage is reversible.

The lens then rapidly becomes cataractous, with dense, white subcapsular opacities in the anterior and posterior cortex resembling a snowstorm- *'snowflake'* cataract. Fine, needle-shaped polychromatic cortical opacities may also form. With appropriate treatment to control hyperglycaemia, the rapid progression to mature

cataract may be arrested at this stage.

## 1202. Soft contact lenses are made of:

a) Polymethyl methacrylate

b) Hydroxymethyl methacrylate

c) Glass

d) Silicone

Correct Answer - B
Ans. Hydroxymethyl methacrylate

## 1203. Ganglionic cells are, neurons ?

a) First order

b) Second order

c) Third order

d) None

Correct Answer - B
Ans. is 'b' i.e., Second order

## 1204. Primary action of inferior oblique ?

a) Abduction

b) Adduction

c) Extorsion

d) Elevation

Correct Answer - C
Ans. is 'c' i.e., Extorsion

## 1205. Right esotropia is evident with ?

a) Left lateral rectus paralysis

b) Right lateral rectus paralysis

c) Left medial rectus paralysis

d) Right medial rectus paralysis

Correct Answer - A
Ans. is 'a' i.e., Left lateral rectus paralysis

## 1206. Disscociated vertical deviation seen in ?

a) AV dissociation

b) Infantile esotropia

c) Congenital esotropia

d) Superior oblique palsy

Correct Answer - C
Ans. is 'c' i.e., Congenital esotropia
The usual age of presentation of congenital (infantile) esotropia is between 2-4 months of age. Presentation at birth is very rare.
Infantile esotropia has been classically described as large angle constant esotropia (not variable).
The classicle triad of associated motor abnormalies in congenital esotropia is *inferior oblique overaction,* dissociated vertical deviation (DVD) and latent nystagmus.
*"It seems, from a review of literature, that infants with esotropia have, on average, refractive errors similar to the normal age matched population".* — Handbook

## 1207. Following is a feature of concomitant squint ?

a) Constant amount of deviation in all directions of gaze

b) Associated limitation of ocular movements

c) Different amount of deviation in different directions of gaze

d) Develops in the patients at 15 - 20 years of age.

Correct Answer - A

**Ans. is 'a' i.e., Constant amount of deviation in all directions of gaze**

**MANFEST SQUINT (HETEROTROPIA)**

- In manifest squint the deviation of eye is present as such and cannot be compensated by fusion. Two main types of manifest squint are concomitant squint and paralytic squint.

A) <u>Concomitant squint</u>

In concomitant squint the eyes are not in alignment and the degree of malalignment remains constant in all the directions of gaze and there is no limitation of ocular movements. Concomitant squint may be of following types:

1) Esotropia (Convergent squint) :- It denotes inward deviation of eye. It can be *unilateral or uniocular* (the same eye always deviates inwards) or *alternating* (either of the eyes deviates inwards and the other eye takes up fixation, alternately). *Concomitant esotropia is the most common type of squint in children.* Following types of esotropia are there :-

i) Congenital esotropia (infantile esotropia)

- True congenital (infantile) esotropia usually appears between the age of 2 and 4 months. However, rarely it may be present from birth. The inward turn of the eye is constant of large amount, i.e., deviation

is > 35 prism diopters (17-5').

- *Binocular vision (both eyes fixing simultaneously) does not develop.* There is *alternate fixation in primary gaze,* i.e, when the infant looks straight, he fixes the gaze with one eye at a time alternately. On lateral gaze there is *cross fixation,* i.e, use right eye to fix across the nose to view the objects to the left and vice versa. *Amblyopia* develops in 25- 40% of cases.
- Latent horizontal nystagmus (common) and many rotatory nystagmus may occur. Inferior oblique overaction may be present initially or develop later and *dissociated vertical deviation* develop in 80% by age of 3 years.
- It is more difficult to help this type of strabismus with nonsurgical methods, thus, surgery is the treatment of choice. Surgical procedure to make both medial recti weak by recession. Surgery should be done as early as possible to avoid development of amblyopia and for the development of proper binocular vision. The usually recommended time is *between 6 month - 2 years of age (and preferably before 1 year of age).It* is important to treat the amblyopia before performing surgery by *patching of normal eye.*

ii) Accommodative esotropia

- Accommodative esotropia occurs due to overaction of convergence associated with accommodation reflex. *Accommodative esotropia is the most common type of squint in children* (Previously it was believed that congenital esotropia is the most common type squint in children. However now it is very much clear that accommodative esotropia is the most common one). It esotropia is noted around 2-3 years of age, it is most likely accommodative esotropia. On the bases of AC/A (accommodative convergence/accomodation) ratio, accommodative esotropia is divided into two types : (a) Refractive (Normal AC/A ratio); (b) Non - refractive (abnormal AC/A ratio). AC/A ratio gives the relationship between the amount of convergence that is goverened by a given amount of accommodation.

a. *Normal AC/A ratio accommodative esotropia :-* This occurs in *children with hypermetropia.* Esotropia is a physiological response to excessive hypermetropia. Patients with high hypermetropia generate large amount of accommodation to see clearly at near fixation. This

excessive accommodation may cause esotropia as accommodation is associated with convergence. AC/A *ratio is normal.*

- *Large AC/A ratio accommodative esotropia :-* Children have large amounts of focusing power and sometimes the increase of accommodation is accompanied by a disproportionately large increase of convergence. This occurs in patient with hypermetropia but may occur in myopia and without any refractive error. AC/A *ratio is high.*
- Usually, there are no symptoms except for cosmetic embarrassment to the patient. *There is no diplopia* as the image in the squinting eye is automatically suppressed, i.e., amblyopia develops in squinting eye. The main feature is the failure of binocular vision.

2) Exotropia (divergent squint) :- It is characterized by outward deviation of eye. This is very less common than esotropia.

3) Hypertropia (Vertical squint) :- It is characterized by vertical deviation of eye. It is also rare.

B) Incomitant squint

Incomitant squint is a squint in which the angle of deviation differs depending upon the direction of gaze i.e, amount of deviation varies in different directions of gaze. There are many type of incomitant squints (paralytic, restrictive, 'A' & 'V' pattern), however the most common type is Paralytic squint and the word incomitant squint is usually used for paralytic squint. Therefore, I will explain paralytic squint here *Paralytic squint is the most common type of squint in adults.* Paralytic squint is the strabismus resulting from complete or incomplete paralysis of one or more extraocular muscles. There are many causes like neurogenic (e.g. meningitis, cranial nerve palsy etc.), myogenic (myopathies), or neuromuscular junction lesions. o Symptoms of paralytic squint are :-

i) Diplopia : It is the main symptom. It is most marked in the direction of action of paralysed muscle. For example in left rectus palsy, the maximum diplopia occurs when patient tries to see horizontally on left side and in left superior oblique palsy (causes Dextrodepression) diplopia is maximum when patient tries to look downward and right. It is worth noting here that in diplopia, if the images are separated horizontally it is probable that either a lateral or a medial recuts is affected; when the images are separated vertically or the image is tilted (torsion) it is likely that one or more of the vertical recti or the

tilted (torsion) it is likely that one or more of the vertical recti or the obliques are affected.
ii) Other symptoms : Confusion, nausea & vertigo, ocular deviation, loss of stereopsis.

**Signs of paralytic squint are :-**

i) Secondary deviation is more than primary deviation:- Primary deviation is the deviation in the affected eye and is away from the action of paralysed muscle. *Secondary deviation* is the deviation of normal eye seen under cover, when the patient is made to fix with the squinting eye.
ii) Restriction of ocular movements
iii) Compensatory head posture :- Patients with a paralytic squint move their head such that the eyes occupy a position in the orbit where the angle of squint is minimal and this can avoid confusion and diplopia. Head is turned towards the action of paralysed muscle. When the horizontal recti (medial or lateral) are affected, the characteristic posture is a turn of the face to right or left, e.g. in left lateral rectus palsy the head is turned to the left and in left medial recuts palsy the head is turned to the right. When a vertical rectus (superior or inferior) or an oblique muscle is affected, a tilt of the head to the right or left with depression or elevation of the chin is adopted to reduce both the vertical deviation and rotation, e.g in superior oblique palsy (dextrodepression of left eye is affected) the head is tilted to left so that the left eye can see down and medially.
iv) There is false projection or orientation
v) There is no amblyopia and visual acuity is normal as paralytic squint develops in adults when visual acuity has already developed.

## 1208. Diplopia is usually seen in ?

a) Paralytic squint

b) Non-paralytic squint

c) Both of the above

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Paralytic squint

## 1209. Following are the clinical features of Leber optic neuropathy except

a) Seen in the 2nd or 3rd decade of life

b) It is a example of gradual painless visual loss

c) Males can transmit the disease

d) No leak of dye is observed in fluorescein angiography

Correct Answer - C

**Ans. is 'c' i.e., Males can transmit the disease**

**Leber's Hereditary optic neuropathv**

Leber's hereditary optic neuropathy is characterized by *sequential subacute optic neuropathy* in males aged 11-30 years. The underlying genetic abnormality is a point mutation in mitochondria! DNA. Since mitochondrial DNA is exclusively derived from mother, males do not transmit the disease and the disease is transmitted by carrier females.

It is characterizeed by *bilateral, painless, subacute visual failure* that develops *during young adult life. Males* are four to five times more likely than females to be affected. Affected individuals are usually entirely asymptomatic until they develop blurring affecting the central visual field of one eye; Similar symptoms appear in the other eye an average of two to three months late. In about 25% of cases, visual loss is bilateral at onset.

On examination, patients generally have bilateral impairments of visual acuity. There is centrocecal scotoma that begins nasal to the blind spot and extends to involve fixation of both sides of the vertical meridian. Pupillary reactions are often normal. Ophthalmoscopic examination shows fundus abnormalities *in acute phase* like swelling of the disc, peripapillary retinal telangiectasia, but characteristically

there is no leak from the optic disc during fluorescein angiography. Later in atrophic phase, disc becomes atrophic and pale.

## 1210. Homonymous hemianopia type of visual field defect is seen in all except ?

a) Lateral geniculate body

b) Total optic radiation

c) Optic tract

d) Optic chaisma

Correct Answer - D
Ans. is 'd' i.e., Optic chaisma

## 1211. Bitemporal hemianopia is characteristic of ?

a) Glaucoma

b) Optic neuritis

c) Pituitary tumor

d) Retinal detachment

Correct Answer - C
Ans. is 'c' i.e., Pituitary tumor
Characteristic visual field defect of central chiasmatic lesion is bitemporal hemianopia. Pituitary tumor causes central chiasmatic lesion.
*Bitemporal hemianopia results due to central (sagittal) lesion of the optic chiasma, common causes of which are tumors of the pituitary gland (most common), craniopharyngioma, suprasellar meningioma, glioma of third ventricle, chiasmal arachnoiditis, and third ventricular dilatation.*

## 1212. Wernicke's hemianopic pupillary reponse is seen in lesions at ?

a) Optic tract

b) Optic chiasma

c) Optic radiation

d) Lateral geniculate body

Correct Answer - A
Ans. is 'a' i.e., Optic tract

## 1213. Marcus gunn jaw winking phenomenon due to relation between which cranial nerves

a) VII + VIII

b) III + V

c) V + VII

d) III + VI

Correct Answer - B
Ans. is 'b' i.e., III + V
Marcus Gunn phenomenon (a.k.a. Marcus Gunn Jaw-Winkingor **Trigemino-oculomotor Synkineses)**

- IT is an autosomal-dominant condition with incomplete penetrance, in which nursing infants will have rhythmic upward jerking of their upper eyelid.
- This condition is characterized as a synkinesis: when two or more muscles that are independently innervated have either simultaneous or coordinated movements.

## 1214. A person with defective blue color appreciation is called ?

a) Deuteranomalous

b) Deuteranopia

c) Tritanopia

d) Tritanomalous

Correct Answer - D
Ans. is `d' i.e., Tritanomalous

## 1215. Brushfield spot in iris is seen in -

a) Neurofibromatosis

b) Down syndrome

c) Tuberous sclerosis

d) Toxoplasmosis

Correct Answer - B
Ans. is 'b' i.e., Down syndrome
Brushfield spots are white spots in the iris in patients with Down syndrome.

## 1216. Most common orbital cyst in children-

a) Neuroenteric cyst

b) Dermoid cyst

c) Lymphoma

d) Clobomatous cyst

Correct Answer - B
Ans. is 'b' i.e., Dermoid cyst
Epidermal dermoid cyst (dermoid) is by for the most common orbital cystic lesion in children, accounting for over 40% of all orbital lesions of childhood and for 89% of all orbital cystic lesions of childhood that come to biopsy or surgical removal.
Most important secondary cyst is a mucocele that can occur in children with cystic fibrosis.

## 1217. Most common malignant intraorbital tumor in adult is ?

a) Lymphoma

b) Rhabdomyosarcoma

c) Dermoid cyst

d) Sarcoma

Correct Answer - A

**Ans. is 'a' i.e., Lymphoma**

An orbital tumor is any tumor that occurs within the orbit of the eye. The orbit is a bony housing in the skull that provides protection to the entire eyeball except the frontal surface. It is lined by the orbital bones and contains the eyeball, its muscles, blood vessels, nerves and fat.

- An intraocular tumor is the tumor which occurs within the eyeball.
- *Most common intraocular tumor in adults is metastasis.* Metastasis is particularly common from carcinoma of breast and lung.
- *Most common primary intraocular tumor in adults is uveal melanoma.* Most of the uveal malignant melanoma arise in choroid.
- *Most common primary intraocular tumor is children is retinoblastoma.*
- *Most common orbital tumors in adults are benign vascular tumors → Cavernous* hamangioma.
- *Most common malignant orbital tumor in adult → lymphoma*
- *Most common orbital tumors in children are benign tumors → Dermoid cyst > capillary hemangioma*
- Most common malignant orbital tumor in children → rhabdomyosarcoma.
- Overall most common primary malignant tumor of eye is malignant

melanoma followed by retinoblastoma

- *Most common malignant eyelid tumor* → Basal cell carcinoma.
- *Most common epithelial tumor of lacrimal gland Pleomorphic adenoma (benign mixed tumor)*
- *Overall most common tumor of lacrimal gland → Lymphoid tumour and inflammatory pseudo - tumors*
- *Most common malignant tumor of conjunctiva & cornea → Squamous cell carcinoma.*

## 1218. Most common primary intraocular neoplasm in a child is ?

a) Metastasis

b) Retinoblastoma

c) Basal cell carcinoma

d) Squamous cell carcinoma

Correct Answer - B
Ans. is 'b' i.e., Retinoblastoma

## 1219. Retinoblastoma can occur bilaterally in how many percentage of the cases?

a) 10 - 15%

b) 15 - 20%

c) 20 - 25%

d) 25 - 30%

Correct Answer - D
**Ans. is 'd' i.e., 25- 30%**
**RETINOBLASTOMA**

- Retinoblastoma is the most common intraocular tumor in children. The tumor is confined to *infancy and very young children (1-2 years).* There is *no sex predisposition.* Retinoblastoma is unilateral in 70-75% of cases and bilateral in 25-30% of cases.

**Etiology**

- Retinoblastoma gene (RB gene) is located on 14 band on the *long arm of chromosome 13 (13q14).* RB gene is a *tumor supressor gene.* Retinoblastoma develops when *both the normal alleles of the **RB** genes are inactived or altered.It* is typical example of Knudson's two hit hypothesis. In *Hereditary retinoblastoma* first genetic change (first hit) in RB gene is inherited from an affected parent, where as second mutation (second hit) occurs in postnatal life and both alleles are lost. In *non- hereditary* retinoblastoma, both mutations (first and second hits) occur postnataly.

## 1220. Axial proptosis is produced by tumors lying in ?

a) Retrobulbar space

b) Subperiosteal space

c) Tenon space

d) Peripheral space

Correct Answer - A

**Ans. is 'a' i.e., Retrobulbar space**

**SURGICAL SPACES IN THE ORBIT**

- These are of importance as most orbital pathologies tend to remain in the space in which they are formed.
- Therefore, their knowledge helps the surgeon in choosing the most direct surgical approach. Each orbit is divisible into four surgical spaces.

1. The subperiosteal space

- This is a potential space between the bone and the periorbita (periosteum).

2. The peripheral space

- It is bounded peripherally by the periorbita and internally by the four recti with thin intermuscular septa. Tumours present here produce eccentric proptosis and can usually be palpated. For peribulbar anaesthesia, injection is made in this space.

3. The central space

- *It is also called muscular cone or retrobulbar space.* It is bounded anteriorly by the Tenon's capsule lining back of the eyeball and peripherally by the four recti muscles and their intermuscular septa in the anterior part. In the posterior part, it becomes continuous with the peripheral space. Tumours lying here usually produce axial

proptosis. Retrobulbar injections are made in this space.
4. Tenon's space

- It is a potential space around the eyeball between the sclera and the tenons capsule.

## 1221. Pulsatile proptosis is a feature of ?

a) Orbital varix

b) Retinoblastoma

c) Cortico-cavernous fistula

d) Covernous sinus thrombosis

Correct Answer - C

Ans. is 'c' i.e., Cortico-cavernous fistula

**Proptosis**

- Proptosis is bulging of the eyeball (forward bulging) beyond the orbital margins. Though the word exophthalmos is synonymous with proptosis; some source define xophthalmos as a protrusion of globe greater than 18mm and proptosis as a protrusion equal to or less than 18 mm. Proptosis may be classified as follows : ?
- Unilateral Proptosis Proptosis of one eye.
- Inflammatory lesions :- Orbital cellulitis, abscess, cavernous sinus thrombosis, etc.
- Vascular disturbances :- Haemorrhage, varicose orbital veins, haemangioma, etc.
- Cysts and tumour :- Dermoid cyst, osteoma, lymphoma, lymphosarcoma, glioma, meningioma of optic nerve, retinoblastoma and metastatic deposits in orbit Neuroblastoma, breast, prostate, lung, GIT, Kidney, Ewing's tumor, melanoma, wilms tumor (Nephroblastoma)].
- Systemic diseases - Leukemias and endocrine disturbances such as Graves' disease and thyrotropic exophthalmos in initial stages.
- Paralysis of extraocular muscles as in complete ophthalmoplegia.
- Mucocele of PNS' - Frontal (most common), ethmoid, maxillary.

**Bilateral Proptosis Proptosis of both eyes.**

- evelopmental anomalies of the skull- Oxycephaly (tower skull).
- Endocrine exophthalmos, both thyrotoxic and thyrotropic.
- Inflammatory lesions - Cavernous sinus thrombosis.
- Tumours - lymphosarcoma, lymphoma, pseudotumour, nephroblastoma, Ewing's sarcoma.
- Systemic disease - Histocytosis (Hand - schuller christon disease), amyloidosis, wegner's granulomatosis.

**Intermittent proptosis**

- Proptosis developing intermittently and rapidly in one eye when venous stasis is induced by forward bending or lowering the head, turning the head forcibly, hyperextension of the neck, coughing, forced expiration with or without compression of the nostrils, or pressure on jugular veins. The most important casue is orbital varix (varicocele).
- Pulsatile proptosis : - Pulsatile proptosis is seen in caroticocovernous fistula; saccular aneurysm of ophthalmic artery; and due to transmitted cerebral pulsation as seen in meningocele, neurofibromatosis and traumatic or operative hiatus.

## 1222. Stye is suppurative inflammation of glands of ?

a) Zeis

b) Meibonian

c) Wolfring

d) All the above

Correct Answer - A
Ans. is 'a' i.e., Zeis

## 1223. Meibomian glands secrete which component of sweat?

a) Water (aqueous)

b) Mucin

c) Protein

d) Lipid

Correct Answer - D
Ans. is 'd' i.e., Lipid

- The major function of lacrimal apparatus is to secrete and drain the tear.
- **Tear film consists of 3 layers :-**

i. *Mucous or mucin layer (innermost):-* Secreted by conjunctival goblet cells, crypts of Henle, glands of Manz.
i. *Aqueous layer (intermediate) :-* This forms the bulk of the tear. It is secreted by main lacrimal and accessory lacrimal glands.
i. *Lipid layer (outermost) :-* Secreted by the Meibomion Zeis, and Moll glands.

## 1224. Treatment of dacryocystitis in three months old child ?

a) Daily probing

b) Weekly probing

c) Massaging

d) Syringing

Correct Answer - C
Ans. is 'c' i.e., Massaging
Spontaneous recanalization of obstructed nosolacrimal duct occurs during first 6-8 weeks and sometimes after 6-12 months in 90% of infants. Therefore upto 9-12 months only massage and antibiotic drops are indicated. After the age of 12 months high pressure syringing is indicated.

## 1225. Treatment of acute dacrocystitis in stage of cellulitis is ?

a) Antibiotics

b) Abscess drainage

c) DCT

d) DCR

Correct Answer - A

**Ans. A. Antibiotics**

**Treatment of acute dacyrocystitis**

- During cellulitis stage
- It consists of systemic and topical antibiotics to control infection; and systemic anti-inflammatory analgesic drugs and hot fomentation to relieve pain and swelling.

## 1226. For congenital obstruction of nasolacrimal duct, probing is done at what age ?

a) 2 months

b) 6 months

c) 10 months

d) 14 months

Correct Answer - B
Ans. is 'b' i.e., 6 months
Probing of congenital nasolacrimal duct blockade with Bowman's probe
It should be performed, in case the condition is not cured by the age of 3-4 months.
Some surgeons prefer to wait till the age of 6 months.
It is usually performed under general anaesthesia.
While performing probing, care must be taken not to injure the canaliculus.

## 1227. Treatment for mild ptosis is ?

a) Fasanella servat operation

b) Levator resection

c) Frontalis sling operation

d) Everbusch's operation

Correct Answer - A
Ans. is 'a' i.e., Fasanella servat operation
*Fasanella-Servat operation.* It is performed in cases having mild ptosis (1-5-2mm) and good levator function. In it, upper lid is everted and the upper tarsal border along with its attached Muller's muscle and conjunctiva are resected.

## 1228. Kayser flescher ring is seen in ?

a) Siderosis

b) Chalcosis

c) Open angle glaucoma

d) Chemical injuries

Correct Answer - B

**Ans. is 'b' i.e., Chalcosis**

**Chalcosis**

- It refers to the specific changes produced by the alloy of copper in the eye.
- Mechanism. Copper ions from the alloy are dissociated electrolytically and deposited under the membranous structures of the eye. Unlike iron ions these do not enter into a chemical combination with the proteins of the cells and thus produce no degenerative changes.
- *Clinical manifestations*

i. *Kayser-Fleischer ring :* It is a golden brown ring which occurs due to deposition of copper under peripheral parts of the Descemet's membrane of the cornea.

i. *Sunflower cataract :* It is produced by deposition of copper under the posterior capsule of the lens. It is brilliant golden green in colour and arranged like the petals of a sun flower.

i. *Retina :* It may show deposition of golden plaques at the posterior pole which reflect the light with a metallic sheen.

## 1229. `Ischemic necrosis' in alkali burn is ?

a) Stage I

b) Stage II

c) Stage III

d) Stage IV

Correct Answer - A
Ans. is 'a' i.e., Stage I
Alkali burns are among the most severe chemical injuries to eye. Common alkalies responsible for burns are liquid ammonia (most harmful), lime, caustic potash or caustic soda. o Clinical features are divided into three stages.
1) Acute ischemic necrosis (Stage I) :- In this stage there are signs in conjunctiva (edema, congestion, necrosis, copious discharge), cornea (sloughing, edema and opacity) and iris (iridocyclitis).
2) Reparation (Stage II) :- Conjunctival and corneal epithelium regenerate, and there is corneal neovascularization.
3) Complications (Stage III) :- *Symblepharon,* recurrent corneal ulceration, complicated cataract, secondary glaucoma.

## 1230. Bett's classification deals with ?

a) Ocular trauma

b) Ocular foreign body

c) Squint

d) Maculopathy

Correct Answer - A
**Ans. is 'a' i.e., Ocular trauma**
**BETTS (Birmingham Eye Trauma Classification System)**
Ocular trauma classification group has organized eye injuries using standard technology to describe various forms of ocular injury. This is called BETTS - Birmingham Eye Trauma Classification System.

## 1231. Steroid is contraindicated in ?

a) Herpetic keratitis

b) Atopic dermatitis

c) Fungal corneal ulcer

d) Exposure keratitis

Correct Answer - C

Ans. is 'c' i.e., Fungal corneal ulcer

- *Topical corticosteroids enhance fungal replication and corneal invasion and therefore, contraindicated in a fungal corneal ulcer.*
- Now, option 'a' requires specific mention here :-
- Topical corticosteroids are contraindicated in herpetic keratitis. But not in all forms of herpetic keratitis :-

i. *Epithelial herpetic keratitis (Dendritic ulcer, geographic ulcer) Topicla corticosteroids are contraindicated.*

i. *Stromal keratitis (Disciform & Diffuse necrotic) Topical corticosteroids along with topical antiviral drugs are used as the first line of treatment.*

- So, my opinion for this type of question is that :-

i. If herpetic keratitis has given as the option, then look at other options. If any of the other options is a clear cut contraindication for corticosteroid (e.g. fungal corneal ulcer in this question), consider that option as your answer. If no ther option is a contraindication for topical corticosteroid, considere herpetic keratitis as the answer.

i. If examiner has specifically mentioned dendritic ulcer as an option, consider it as the answer.

## 1232. Tubular vision seen in -

a) Myopia

b) Hypermetropia

c) Presbyopia

d) Optic neuritis

Correct Answer - A
**Ans. is 'a' i.e., Myopia**
**Causes of Tubular vision**

- Retinitis pigmentosa
- High Myopia
- Primary open angle glaucoma
- CRAO with sparing of cilioretinal artery

## 1233. In xerophthalmia classification X 2 stage is ?

a) Bitots spots

b) Corneal xerosis

c) Corneal ulceration

d) Corneal scar

Correct Answer - B

**Ans. is b i.e., Corneal xerosis**

**<u>WHO classification (1982)</u>**

- The new xerophthalmia classification (modification of original 1976 classification) is as follows :

1. XN Night blindness
2. X1A Conjunctival xerosis
3. X1B Bitot's spots
4. X2 Corneal xerosis
5. X3A Corneal ulceration/keratomalacia affecting less than one-third corneal surface.
6. X3B Corneal ulceration/keratomalacia affecting more than one-third corneal surface.
7. XS Corneal scar due to xerophthalmia
8. XF Xerophthalmic fundus.

## 1234. What is the correct sequence of xerophthalmia

a) Nightblindness 4 Conjunctival xerosis → corneal xerosis - corneal ulcer

b) Conjunctival xerosis → corneal xerosis → corneal ulcer → Nightblindness

c) Corneal xerosis → corneal ulcer 4 Nightblindness → Conjunctival xerosis

d) Corneal ulcer → Nightblindness → Conjunctival xerosis -3 corneal xerosis

Correct Answer - A

**Ans. A. Nightblindness 4 Conjunctival xerosis → corneal xerosis - corneal ulcer**

## 1235. Increased intraocular tension can be diagnosed by ?

a) Tonometer

b) Pachymeter

c) Placido's disc

d) Keratometer

Correct Answer - A
Ans. is 'a' i.e., Tonometer
The exact measurement of intraocular pressure is done by an instrument called *tonometer.* Indentation (Schiotz tonometer) and applanation (e.g., Goldmann's tonometer) tonometers are frequently used.

## 1236. Following is true about behcet's disease except ?

a) It shows presence of aphthous ulceration, genital ulceration and uveitis

b) Uveitis is bilateral, acute recurrent iridocyclitis with hypopyon

c) It has good visual prognosis

d) Chlorambucil can be used to control the disease

Correct Answer - C

**Ans. is 'c' i.e., It has good visual prognosis**

**BEHCET'S DISEASE**

It is an idiopathic multisystem disease characterised by recurrent, non-granulomatous uveitis, aphthous ulceration, genital ulcerations and erythema multiforme.

**Etiology**

- It is still unknown; the basic lesion is an obliterative vasculitis probably caused by circulating immune complexes. The disease typically affects the young men who are positive for HLA-B5 1.

**Clinical features**

- *Uveitis seen in Behcet's disease* is typically bilateral, acute recurrent iridocyclitis associated with hypopyon. It may also be associated with posterior uveitis, vitritis, periphlebitis retinae and retinitis in the form of white necrotic infiltrates.

**Treatment**

- No satisfactory treatment is available, and thus the disease has got comparatively poor visual prognosis. Corticosteroids may by helpful initially but ultimate response is poor. In some cases the disease may be controlled by *chlorambucil.*

## 1237. How many incisions are used in the divided system approach of pars planavitrectomy?

a) 1

b) 2

c) 3

d) 4

Correct Answer - C

**Ans. is 'c' i.e., 3**

**Techniques of performing vitrectomy**

A) Open-sky vitrectomy

- This technique is employed to perform only anterior vitrectomy. Open sky vitrectomy is performed through the primary wound to manage the disturbed vitreous during cataract surgery or aphakickeratoplasty.

B) Closed vitrectomy (Pars planavitrectomy)

- Pars plana approach is employed to perform core vitrectomy, subtotal and total vitrectomy.Pars planavitrectomy is a highly sophisticated microsurgery which can be performed by using two type of systems:

1. *Full function system vitrectomy* is now-a-days sparingly used. It employs a multifunction system that comprises vitreous infusion, suction, cutter and illumination (VISC), all in one.
2. *Divided system approach* is the most commonly employed technique in modern vitrectomy. In this technique three *separate incisions are given in pars plana region. That is why the procedure is also called three-port pars plana vitrectomy.* The cutting and aspiration

functions are contained in one probe, illumination is provided by a separate fiberoptic probe and infusion is provided by a carmula introduced through the third pars plana incision.

## 1238. Following is true about oculocardiac reflex except ?

a) It is also called aschner phenomenon

b) It is mediated by occulomotor and vagus nerve

c) It is characterized by bradycardia following traction on extra-ocular muscles

d) Reflex is more sensitive in neonates

Correct Answer - B

**Ans. is 'b' i.e., It is mediated by occulomotor and vagus nerve**

**Oculocardiac reflex**

- Oculocardiac reflex, is also known as Aschner phenomenon, Aschner reflex, or Aschner-Dagnini reflex, o It is characterized by decrease in pulse rate (bradycardia) associated with traction applied to extraocular muscles and/or compression of the eyeball.
- The reflex is mediated by nerve connections between the ophthalmic branch of the trigeminal cranial nerve via the ciliary ganglion, and the vagus nerve of the parasympathetic nervous system.
- This reflex is especially sensitive in neonates and children, particularly during strabismus correction surgery. However, this reflex may also occur with adults.
- Bradycardia, junctional rhythm and asystole, all of which may be life-threatening,can be induced through this reflex.

## 1239. Pleomorphic adenoma of the lacrimal gland moves the eyeball ?

a) Downwards and outwards

b) Downwards and inwards

c) Upwards and outwards

d) Upwards and inwards

Correct Answer - A

**Ans. is 'a' i.e., Downwards and outwards**

**Benign mixed tumour of lacrimal gland IPleomorphic adenoma'**

- It is also known as *pleomorphic adenoma* and occurs predominantly in young adult males.
- *Clinically* it presents as a slowly progressive painless swelling in the upper-outer quadrant of the orbit displacing the eyeball downwards and outwards.
- It is locally invasive and may infiltrate its own pseudocapsule to involve the adjacent periosteum.
- *Histologically,* it is characterised by presence of pleomorphic myxomatous tissue, just like benign mixed tumour of salivary gland.
- *Treatment* consists of complete surgical removal with the capsule. Recurrences are very common following incomplete removal.

## 1240. Illuminated frenzel glasses are used in detecting?

a) Nystagmus

b) Heterophoria

c) Esotropia

d) Astigmatism

Correct Answer - A
Ans. is 'a' i.e., Nystagmus
Illuminated frenzel galsses (+20 lenses) are useful for abolishing fixation and thus revealing peripheral vestibular nystagmus.

## 1241. Which metabolic derangement is seen in pregnancy?

a) Metabolic acidosis

b) Metabolic alkalosis

c) Respiratory acidosis

d) Respiratory alkalosis

Correct Answer - D
**Answer- D. Respiratory alkalosis**
Hyperventilation in pregnancy will lead to respiratory alkalosis.
The hyperventilation that occur during pregnancy is probably due in part to progesterone stimulating the centre.
Lung volume changes and altered compliance may also contribute.
The effect is a chronic respiratory alkalosis which is compensated by renal excretion of bicarbonate.

## 1242. Turner syndrome is maximally associated with *?*

a) Horseshoe kidney

b) Coarctation of aorta

c) VSD

d) ASD

Correct Answer - B
Ans. is 'b' i.e., Coarctation of aorta
Among the given options Aortic coarctation is most common.

- Turner's syndrome is commonly associated with congenital heart diseases.
- The most common anomaly associated is bicuspid Aortic valves in one third to one half of the patients (50%).
  - *Other congential anomalies associated with Turner's syndrome —> Aortic coarctation (30%), Aortic stenosis, Mitral valve prolapse, Anomalous pulmonary venous drainage.*

**1243.** **All of the following are true about treatment of migraine, EXCEPT:**

a) Naratriptan acts longer than sumatryptan

b) Sumatryptan is used in acute attack of migraine

c) Sumatryptan acts on 5HT 1B/1D receptors in great vessels

d) Sumatryptan is used for chronic migraine

Correct Answer - D

Sumatriptan is an agonist at 5-HT serotonin receptors, in particular $5HT_{1B/1D}$ receptors. It is used in the treatment of acute migraine attacks but is not recommended for migraine prophylaxis. The drug provides rapid relief of migraine headache as well as relief of the associated manifestations of migraine including nausea, vomiting, photophobia and phonophobia.
Short-acting, rapidly effective triptans include almotriptan, sumatriptan, rizatriptan, zolmitriptan, and eletriptan, whereas naratriptan and frovatriptan have the longest half-lives.

$5HT_{1B/1D}$ receptor agonists are sumatriptan, naratriptan, rizatriptan, and zolmitriptan.

**Ref:** Instant Pharmacology By Kourosh Saeb-Parsy, Ravi G. Assomull, Fakhar Z. Khan, Kasra Saeb-Parsy, Eamonn Kelly, 1999, Page 300 ; Harrison's 17th ed chapter 15

## 1244. Which of the following is not used for investigation of fat malabsorption

a) 13C Trioctanoin

b) 13C Triolein

c) 13C Tripalmitin

d) 13C Triclosan

Correct Answer - D
**Answer- D. 13C Triclosan**
**Tests used for fat malabsorption**
1. "C Triolene breath test
2. '3C Tripalmitin breath test
3. '3C Mixed-Triglyceride breath test
4. "C-Trioctanoin breath test

## 1245. Typhoid is treated by all except

a) Erythromycin

b) Ceftriaxone

c) Amikacin

d) Ciprofloxacin

Correct Answer - A
Ans. is 'a' i.e., Erythromycin

- The older agents used for the treatment of typhoid were :
- Chloramphenicol
- Ampicilin

**Trimethoprim Sulfamethoxazole**

***Beta lactam***

Parenteral → Ceftriaxone
Orall → Cefixime

- These drugs *are not used nowdays because of widespread resistance. o Nowdays the drug of choice for Typhoid all over the world is a "Fluroquinolone" (Ciprofloxacin, ofloxacin).*
- *An important point to remember*
- *High level of fluoroquinolone resistance (ciprofloxacin) have been reported from India and other parts of South East Asia in S. paratyphi and S.typhi infection.*
- *Nalidixic acid resistant S.typhi (NARST) have decreased ciprofloxacin sensitivity and are less effectively treated with fluoroquinolones.*
- *The fluroquinolones should not be used as first line treatment for typhoid fevers in patients from India and other parts of South Asia with high rates of fluroquinolone resistance unless antibiotic susceptibility data demonstrates fluoroquinolone or nalidixic acid*

*sensitivity.*

## 1246. Drug treatment is given for how many days in pneumococcal meningitis

a) 5 days

b) 7 days

c) 14 days

d) 21 days

Correct Answer - C
Ans. is 'c' i.e., 14 days
**Recommendations for duration of treatment**

- Pneumococcal meningitis —> 10-14 days
- ***Meningococcal meningitis*** ***5-7 days***
- ***Hib meningitis*** ***—> 7-14 days***
- *Listeria meningitis* —> *21 days*

## 1247. The treatment of choice in acute hyperkalemia of life threatening to cardiac myocytes is

a) Infusion of calcium gluconate

b) Oral resins

c) Intravenous infusion of insulin

d) β blocker

Correct Answer - A
Ans. is `a' i.e. Infusion of calcium gluconate

- **Emergent t/t of hyperkalemia is needed in conditions with severe hyperkalemia (IC >7 meq/L). In these cases cardiac toxicity or muscular paralysis is present.**
- ***Calcium gluconate is the fastest acting agent among the agents used in the t/t of hyperkalemia°.***
  ***It acts within minutes but an important point to note is that it does not cause transcellular movement of potassium, instead, it acts on cardiac cell membrane***

## 1248. Vitamin E deficiency causes

a) Hemorrhagic stroke

b) Cardiac failure

c) Ataxia

d) Megalablastic anemia

Correct Answer - C
**Answer- C. Ataxia**
Clinical Manifestations
Axonal degeneration
Hemolytic anaemia
Peripheral neuropathy
Spinocerebellar ataxia
Dry skin
Thrombocytosis
Ataxia

## 1249. Which of the following circulating antibodies has the best sensitivity and sepcificity for the diagnosis of celiac disease ?

a) Anti Saccharomyces antibody

b) Anti-tissue transglutaminase antibody

c) Anti-gliadin antibody

d) Anti-gliadin antibody antibody

Correct Answer - A
Ans. is 'a' i.e. Anti saccharomyces antibody
**Serologic evaluation in celiac** disease
Immunoglobulin A (IgA) anti-tissue transglutaminase (TTG) antibody is the single preferred test for detection of celiac disease in individuals over the age of two years.
**Serum antibody assays**

- A variety of serologic studies have been described to aid in the diagnosis of celiac disease, including:
- *IgA endomysial antibody (IgA EMA)*
- *IgA tissue transglutaminase antibody (IgA tTG)*
- *IgG tissue transglutaminase antibody (IgG tTG)*
- *IgA deamidated gliadin peptide (IgA DGP)*
- *IgG deamidated gliadin peptide (IgG DGP)*
- Serum IgA endomysial and tissue transglutaminase antibody testing have the highest diagnostic accuracy.
- *The IgA and IgG antigliadin antibody tests have lower diagnostic accuracy with frequent false positive results as compared with IgA tTG and IgA DGP assays and are therefore no longer recommended*

*for initial diagnostic evaluation or screening*

- *However, the newer anti-deamidated gliadin peptide (DGP) assays described above show high diagnostic accuracy.*
- IgA EMA, IgA tTG,IgA DGP and IgG DGP levels fall with treatment; as a result, these assays can be used as a noninvasive means of monitoring the response to a gluten-free diet.

**Assay sensitivity and specificity**

*I*gA endomysial antibodies- → Sensitivity 85 to 98 percent; specificity 97 to 100 percent

IgA tissue transglutaminase antibodies → Sensitivity 90 to 98 percent; specificity 95 to 97 percent --

IgA deamidated gliadin peptide → Sen sitivity 94 percent; specificity 99 percent

IgG deamidated gliadin peptide → Sensitivity 92 percent; specificity 100 percent

# 1250. Aseptic meningitis caused by

a) Indomethacin

b) Ibuprofen

c) Aspirin

d) Icatibant

Correct Answer - B
Ans. is 'b' i.e., Ibuprofen

**Medications known to cause aseptic meningitis Medications**

| Medication | Common | Uncommon |
|---|---|---|
| *NSAIDs* | Ibuprofen | Sulindac Naproxen Diclofenac Rofecoxib |
| Antimicrobials | Trimethoprim/sulfamethoxazole | Sulfonamides |
| Immunomodulating agents | Monoclonalantibody OKT3Intravenous IgG | Azathioprine |
| Intrahecal agents | | Metrizamide Cytarabine Methylprednisolone acetate |
| *Other* | | Carbamazepine |

**Causes of acute aseptic meningitis**

| | |
|---|---|
| **Infectious cases** | |
| *Bacterial* | Lyne disease<br>Leptospirosis<br>Mycobacterium tuberculosis infection<br>Subacute bacterial endocarditis |

| | |
|---|---|
| | ~~Subacute bacterial endocarditis~~ |
| | Parameningeal infection (epidural subdural abcess, sinus or ear infection) Partially treated bacterial meningitis |
| | Echovirus infection |
| | Coxaackie virus infection |
| | Mumps |
| | St. Louis encephalitis |
| | Eastern equine encephalitis |
| *Viral* | Western equine encephalitis |
| | Calcifornia encerphalitis |
| | Herpes simplex virus type 2 infection HIV infection |
| | Lymphocytic choriomeningitis |
| | Poliovirus infection |

## 1251. High Steppage Gait is seen in

a) Foot drop

b) Frontal lobe stroke

c) Tabes dorsalis

d) Leprosy

Correct Answer - C
Ans. is 'c' i.e., Tabes dorsalis

- *High stepping gait or steppage gait or foot drop gait* is due to foot drop -+ leg is lifted more in order to get clearance and first to touch the ground is fore foot (not the heel as occur in normal gait).
- It may occur in all motor peripheral neuropathies involving common peroneal nerve —> *Tabes dorsalis, leprosy etc.*
- *[Ref Harrison 18$^{th}$/e chapter 377]*

## 1252. Feature of Acute severe Asthma include all of the following, Except:

a) Tachycardia > 120/min

b) Pulsus paradoxus

c) Respiratory acidosis

d) Drowsy

Correct Answer - A

**Answer is A. Tachycardia > 120/min**

- Diaphoresis
- Bradycardia
- Paradoxical throcobadominal movements
- PEER < 33%
- Hypotension
- Pulsus paradoxus
- Hypercapnea
- Silent chest

## 1253. In a patient with bronchial asthma silent chest signifies

a) Good Prognosis

b) Bad Prognosis

c) Grave Prognosis

d) Not a Prognostic sign

Correct Answer - C

Ans. is 'c' i.e., Grave Prognosis

- Silent chest (Little/no air movement without wheezes in Bronchial Asthma suggests a grave prognosis/impending respiratory failure (Life threatening Asthma).
- Signs of impending respiratory failure include :
- Drowsiness or confusion
- Diaphoresis
- Bradycardia
- Paradoxical thoraco abdo*minal*

**Signs of impending respiratory failure in Asthma**

- *Drowsiness or confusion*
- *Diaphoresis*
- *Bradycardia*
- *Paradoxical thracoabdominal movements*
- *PEFR < 33%*
- H*ypotension*
- *P*ulsus paradoxus
- Hypercapnea
- *S*ilent chest

## 1254. Which is correct about pneumonia

a) Bronchophonia

b) Decreased vocal fremitus

c) Shifting of trachea

d) Amphoric breathing

Correct Answer - A
Ans. is 'a' i.e., Bronchophonia
**Physical examination findings of Common pulmonary conditions**

| | Pleural effusion | Pneumonia | Endobronchial tumor | Pneumothorax |
|---|---|---|---|---|
| Tracheal position | Shifted or midline | Midline | Shifted or midline | Shifted or midl |
| Chest wall | Reduced or normal | Reduced or normal | Reduced or normal | Reduced |
| Fremitus | Decreased | Increased | Normal or decreased | None |
| Percussion | Dull | Dull | Normal or Dull | Hyperresonant |
| Breath sounds | Decreased | Increased | Normal or Decreased | Decreased/abs |
| Crackles | None | None | None | None |
| Wheeze | None | None | Possible | None |
| Egophony | Band above effusion(skodiac) | Present | None | None |

T**racheal position**

**Deviated**
**Away from**
Pneumo
thorax
**E**ffusion
**Deviated**
**towards**
Collapse
*Consolidation*

***Tactile vocal fremitus***

- Tactile vocal fremitus is vibration felt on the patients chest during low frequency vocalisation.
- *Commonly the patient is asked to repeat a phrase while the examiner feels for vibtations by placing a hand over the patient chest or back.*
- *Tactile fremitus is normally more intense in the right second intercostal space as well as in the interscapular region as these :*

**Tactile fremitus**

*Increased* → *Consolidation*
*D*ecreased or absent → Pleural effusion or Pneumothorax

- Reason for increased fremitus in a consolidated lung is the fact that the sound waves are transmitted with less decay in solid or fluid medium (consolidation) than in a gaseous medium (consolidation) than in a gaseous medium (aerated lung). Conversely the reason for decreased fremitus in a pleural effusion or pneumothorax (or any pathology separating the lung tissue itself from the body wall) is that this increased space diminishes or prevents entirely sound transmission
- Egophony is a change in timbre (E0 to A) but not pitch or volume.
- It is due to decrease in the amplitude and an increase in the frequency of the second formant produced by solid (including compressed lung) interposed between the resonator and the stethoscope head.
- The sound of a spoken "E" change to "A" over an area of consolidation. The spoken "E" is heared as "A" when listening over the consolidation because the frequencies of the vibrations are

altered by the consolidation. Egophony or "E" to "A" changes may also occur in small band like area just above a pleural effusion because of compression of lung tissue that occurs just *above the effusion.*

## 1255. Systemic Millary TB spreads via

a) Artery

b) Vein

c) Bronchus

d) Lymphatic

Correct Answer - A
. Ans. is 'a' i.e., Artery

- *Systemic miliary ensues when infective foci in the lungs seed the pulmonary venous return to the heart; the organisms subsequently disseminate through the systemic arterial system.*

## 1256. DOC for acute attack of Hereditary angioneurotic edema

a) Danazol

b) Cl, inhibitor concentrate

c) Icatibant

d) Methylprednisolone

Correct Answer - B
Ans. is 'b' i.e., Cl inhibitor concentrate
**Medication**

- *$C_1$ inhibitor concentrate (Plasma-derived) (Berinert, Berinert P, Cinryze.*
- R*ecombinant $C_1$ inhibitor Conestat alfa (Ruconest, Rhucin).*
- *Bradykinin $B_z$receptor antagonist Icatibant (Firazyr).*
- *Kallikrein inhibitor Ecallantide (Kalbitor)*
- *Plasma*

# 1257. Type 5 Hypersensitivity mimics

a) Type 1

b) Type 2

c) Type 3

d) Type 4

Correct Answer - B
Ans. is 'b' i.e., Type 2

- *T*ype V hypersensitivity reactions were additionally added to the scheme originally described by Coombs and Gell. Contrary to type IV and in agreement with types I, 11 and III respectively, they are mediated by antibodies too.
  **The type V reactions are sometimes considered as a subtype of the type II hypersensitivity.**
- As its mechanisms do not destroy target cells, they are responsible for induction of organ/tissue dysfunctions only most of authors prefer it to be and independent, the 5' type of hypersensitivity reactions

## 1258. Broca's aphasia is?

a) Fluent aphasia

b) Non fluent aphasia

c) Sensory aphasia

d) Conduction aphasia

Correct Answer - B
Answer is B (Non-fluent Aphasia):
*Broca's Aphasia is a Non-Fluent Expressive (Motor) Aphasia with preserved comprehension and impaired repetition*

## 1259. All of the following are Fluent Aphasia's Except:

a) Anomie Aphasia

b) Wernicke's Aphasia

c) Conduction Aphasia

d) Broca's Aphasia

Correct Answer - D
Answer is D (Broca's Aphasia):
*Neurologic Differential Diagnosis: A Case-Based Approach (Cambridge University Press, 2014)/ 36*
*Broca's Aphasia is a Non-Fluent Expressive (Motor) Aphasia with preserved comprehension and impaired repetition.*
**Non-Fluent Aphasias**

- Global
- Broca's
- Mixed Transcortical
- Transcortical Motor

**Fluent Aphasias**

- Anomie
- Wernicke's
- Conduction
- Transcortical Sensory

## 1260. Comprehension in intact with aphasia in

a) Wernicke's

b) Broca's

c) Global aphasia

d) Transcortical sensory

Correct Answer - B
Ans. is 'b' i.e., Broca's

## 1261. Fluent Aphasia with preserved comprehension and impaired repetition is:

a) Broca's

b) Wernicke's

c) Anomie

d) Conduction

Correct Answer - D
Answer is D (conduction):
*Conduction Aphasia is a 'Fluent' Aphasia with preserved comprehension and impaired Repetition.*

| **Clinical Syndrome** | **Non-Fluent Aphasias** | | | **Fluent Aphas'as** | | | | |
|---|---|---|---|---|---|---|---|---|
| Features | | | | | | | Wernicke's | Transcor Sensory |
| | | Transcortical | Motor | | | | | |
| Fluent | No | No | No | No | Yes | Yes | Yes | Yes |
| Comprehension | No | No | Yes | Yes | Yes | Yes | No | No |
| Repeat | No | Yes | Yes | No | Yes | No | No | Yes |

## 1262. Aphasia which affects the arcuate fibres is called

a) Global aphasia

b) Anomie aphasia

c) Conduction aphasia

d) Broca's aphasia

Correct Answer - C
Ans. is 'c' i.e., Conduction aphasia

- Arcuate fibers are bundle of nerve fibres that connect Brocas area to the Wernicke 's area.
- Damage to the arcuate fascic*ulus causes a disorder called conduction aphasia*

## 1263. Erb's Point in cardiology refers to:

a) Right 2nd intercostal space

b) Left 2nd intercostal space

c) Right 3rd intercostal space

d) Left 2nd intercostal space

Correct Answer - C

Answer *is* C (Right 3rd intercostal space)

*In cardiology, Erb's point refers to the third intercostal space on the left sternal border where both components of S2 (A2 and P2) can be well appreciated.*

*Both components of S2 (A2 and P2) are usually well transmitted to the Erb's point. The physiological splitting of S2 into A2 and P2 is believed to be appreciated best at the Erb's point or in the pulmonic area.*

- A2 is best heard over the aortic area in the right second intercostal space
- P2 is best heard over the pulmonic area in the left second intercostal space
- *Second heart sound (S2) is best heard over the pulmonic area (Since both A2 and P2 can be heard at the pulmonic area) and at the Erb's Point. Note that even at the pulmonic area A2 is louder than P2*

| | | |
|---|---|---|
| 1. | Aortic area | Second intercostal space to the right of the sternum (along right upper sternal border) |
| 2. | Pulmonic area | Second intercostal space to the left of the sternum (along left upper sternal border) |
| 3. | Erb's point | Third intercostal to the left of the sternum(along left sternal border) |

| | | |
|---|---|---|
| 4. | Tricuspid area | Fourth or Fifth intercostal space to the left of the sternum (along left lower sternal border) |
| 5. | Mitral area (Apex) | Fifth intercostal space on the left midclavicular line. |

# 1264. Drug for management of hypertension in Phaeochromocytoma

a) Phenoxybenzamine

b) Phentolamine

c) Labetalol

d) Esmolol

Correct Answer - A
Ans. is 'a' i.e., Phenoxybenzamine

- Once a pheochromocytoma is diagnosed, all patients should undergo a resection of the pheochromocytoma following appropriate medical preparation.
- Resetting a pheochromocytoma is a high-risk surgical procedure and an experienced surgeon/anesthesiologist team is required.
- Some form of preoperative pharmacologic preparation is indicated for all patients with catecholamine-secreting neoplasms.

**Preoperative medical therapy is aimed at:**

- *C*ontrolling hypertension (including preventing a hypertensive crisis during surgery) o Volume expansion
- In patients with undiagnosed pheochromocytomas who undergo surgery for other reasons (and who therefore have not undergone preoperative medical therapy), surgical mortality rates are high due to lethal *hypertensive crises, malignant arrhythmias, and multiorgan failure.*

**Combined alpha- and beta-adrenergic blockade**

- *Combined alpha- and beta-adrenergic blockade is the most common approach to control blood pressure and prevent intraoperative hypertensive crises.*

**Alpha-adrenergic blockade**

- An alpha-adrenergic blocker is given 10 to 14 days preoperatively to normalize blood pressure and expand the contracted blood volume.
- Phenoxybenzamine is the preferred drug for preoperative preparation to control blood pressure and arrhythmia in most centers in the United States. It is an irreversible, long-acting, nonspecific alpha-ad*renergic blocking agent.*
- *The initial dose is 10 mg once or twice daily, and the dose is increased by 10 to 20 mg in divided doses every two to three days as needed to control blood pressure and spells.*
- *The final dose of phenoxybenzamine is typically between 20 and 100 mg daily.*

**Beta-adrenergic blockade**

- After adequate alpha-adrenergic blockade has bee*n achieved, beta-adrenergic blockade is initiated, which typically occurs two to three days preoperatively.*
- *The beta-adrenergic blocker should never be started first because blockade of vasodilatory peripheral betaadrenergic receptors with unopposed alpha-adrenergic receptor stimulation can lead to a further elevation in blood pressure.*

**The alternatives to a and 13 adrenergic agents are calcium channel blockers and metyrosine.**

**Calcium channel blockers**

- Although perioperative alpha-adrenergic blockade is widely recommended, a second regimen that has been utilized involves the administration of a calcium channel blocker.
- Nicardipine is the most com*monly used calcium channel blocker in this setting; the starting dose is 30 mg twice daily of the sustained release preparation.*

**Metyrosine**

- Another approach involves the administra*tion of metyrosine (alpha-methyl Para-tyrosine), which inhibits catecholamine synthesis.*

## 1265. Causes of hyperparathyroidism are all except

a) Solitary adenoma

b) Malignant

c) Thyroid malignancy

d) Parathyroid hyperplasia

Correct Answer - C
Ans.:C.)Thyroid malignancy
**Hyperparathyroidism**
**Pathology**

- Increased levels of the PTH lead to increased osteoclastic activity. The resultant bone resorption produces cortical thinning (subperiosteal resorption) and osteopaenia.

**Subtypes**

- primary hyperparathyroidism
  - parathyroid adenoma (~80%)
  - multiple parathyroid adenomas (4%)
  - parathyroid hyperplasia (10-15%)
  - parathyroid carcinoma (1-5%)
- secondary hyperparathyroidism
  - caused by chronic hypocalcaemia with renal osteodystrophy being the most common cause (others include malnutrition, vitamin D deficiency)
  - results in parathyroid hyperplasia
- tertiary hyperparathyroidism
  - autonomous parathyroid adenoma caused by the chronic overstimulation of hyperplastic glands in renal insufficiency

## 1266. 1 year old male child is having a Heart Rate 40/min, BP 90/60. His serum Potassium = 6.5 what is the next best management?

a) Ipratropium

b) Adrenaline

c) Sodium bicarbonate

d) Calcium chloride

Correct Answer - C
**Answer- C. Sodium bicarbonate**
**For severe elevation 7 meq/L**
**You need to shift potassium into the cells together with elimination of potassium from the body**
1. Stabilize the heart
2. Shift potassium into cells
3. Promotes potassium excretion

**Shift potassium into the cells**

- Calcium Chloride : reduce the effect of potassium at the myocardial cell membrane
- Sodium bicarbonate
- Glucose plus insulin
- Nebulized albuterol

**Promotes potassium excretion**

- Diuretics (Furosemide)
- Kayexalate
- Dialysis

[Ref Harrison's 18`51e chapter 45]

## 1267. Persistent priapism is due to

a) Sickle cell anaemia

b) Hairy cell leukaemia

c) Paraphimosis

d) Urethral stenosis

Correct Answer - A
Ans. is 'a' i.e., Sickle cell anemia

- Priapism is defined as erection lasting for > 4 hours.
- *Low-flow priapism may be due to any of the following:*
- *An excessive release of neurotransmitters*
- *Blockage of draining venules (eg, mechanical interference in sickle cell crisis, leukemia, or excessive use of intravenous parenteral lipids)*
- *Paralysis of the intrinsic detumescence mechanism*
- *Prolonged relaxation of the intracavernous smooth muscles (most often caused by the use of exogenous smooth-muscle relaxants such as injectable intra-cavernosal prostaglandin E I)*
- *Prolonged low-flow priapism leads to a painful ischemic state, which can cause fibrosis of the corporeal smooth muscle and cavernosal artery thrombosis. The degree of ischemia is a function of the number of emissary veins involved and the duration of occlusion*

## 1268. The type of arteritis which may lead to myocardial infarction in children is

a) Kawasaki disease

b) Takayasu arteritis

c) Polyarteritis nodosa

d) Microscopic polyangitis

Correct Answer - A
Ans. is 'a' i.e., Kawasaki disease

- o Kawasaki disease is an acute, self limited vasculitis of unknown etiology that occurs predominantly in infants and young children of all races.
- Coronary artery aneyrysms or ectasia develops in 15-25% of untreated children with the disease and may lead to ischemic heart disease, myocardial infarction, or even sudden death. In the USA, Kawasaki disease has surpassed acture rheumatic fever as teh leading cause of acquited heart disease in children

## 1269. Onion skin spleen is seen in

a) ITP

b) Thalassemia

c) SLE

d) Scleroderma

Correct Answer - C
Ans. is 'c' i.e., SLE
**The characterisitc histopathologic picture of the spleen in SLE is periaterial fibrosis or anion skin lesion**.

- *Fi*rst described by Libman and Sacks, this lesion is defined as the presene of 3 to as many as 20 seperated layers of the normally densely packed periarterial collagen of the penicillary or follicular arteries produ*cing the appearance of concentric rings (onion peel).*

# 1270. Most common pulmonary manifestation in AIDS

a) TB

b) Pneumonia

c) Bronchiectasis

d) Mycobacterial avium intracellular

Correct Answer - B
Ans. is 'b' i.e., Pneumonia
**Respiratory complications in AIDS**
**Respiratory diseases in AIDS include**
**A) *Acute bronchitis and sinusitis***

- They are caused by S. pneumoniae and H influenzae and are very common.

**B) *Pulmonary diseases***

- Pulmonary diseases are :-

**1. Pneumonia**

- *Most common pulmonary manifestation is pneumonia :*
- Bacterial pneumonia : It is caused most commonly by S pneumoniae and pneumococcal infection is the earliest serious infection in AIDS. H influenzae is also a common cause.
- P canna pneum*onia : It is the most common cause of pneumonia in AIDS. Risk is greater when CD4 count less than 200/ml.*

**2. *Tuberculosis***

- *In developing countries like India, most important pathogen is M tuberculosis. Other common pathogen causing TB is MAC (atypical mycobacteria).*

**3. *Other pulmonary diseases***

- *These are fungal infections (cryptococcus, histoplasma, aspergillus),*

*neopasms (Kaposi sarcoma, lymphoma) and idiopathic interstitial pneumonia.*

## 1271. Most common presentation of extra-pulmonary TB

a) Tubercular lymphadenitis

b) Peritoneal TB

c) Pericardial TB

d) Tubercular meningitis

Correct Answer - A

**Answer- A. Tubercular lymphadenitis**

The most common presentation of extra-pulmonary TB in both HIV sero-negative and HIV-infected patients to about 35% in general, lymph node disease is particularly frequent among HIV infected patients and in children.

## 1272. Chronic hemodialysis in ESRD patient is done

a) Once per week

b) Twice per week

c) Thrice per week

d) Daily

Correct Answer - C
Ans. is 'c' i.e., Thrice per week

- For the majority of patients with ESRD, between 9 and 12 h of dialysis are required each week, usually divided into three equal sessions.
- Current targets of hemodialvsis
- Urea reduction ratio (the fractional reduction in blood urea nitrogen per hemodialysis session) of > 65-70%.
- Body water-indexed clearance x time product (KT/V) above 1.2 or 1.05.

## 1273. Interstitial nephritis is common with

a) NSAID

b) Black water fever

c) Rhabdomyolysis

d) Tumor lysis syndrome

Correct Answer - A
Ans. is 'a' i.e., NSAID

**DRUGS CAUSING INTERSTITIAL NEPHRITIS**

| **Antibiotics** | **Diuretics** | **Anticonvulsants** | **Miscellaneous** |
|---|---|---|---|
| β Lactams | *Thiazide* | *Phenytoin* | *Captopril* |
| *Sulfonamides* | *Furosemide* | *Phenobarbitone* | *$H_2$ receptor blockers* |
| *Quinolones* | *Triamterene* | *Carbamazepine* | Omeprazole |
| *Vancomycin* | **NSA*IDS*** | *Valproic acid* | M*esalazine* |
| *Erythromycin* | | | *Indinavir* |
| *Minocycline* | | | *Allopurinol* |
| *Rif*ampicin | | | |
| *Ethambutol* | | | |
| Acyclovir | | | |

## 1274. MELD score includes

a) Serum creatinine

b) Transaminase

c) Albumin

d) Alkaline phosphatase

Correct Answer - A
**Answer. A. Serum creatinine**
The Model for End-stage Liver Disease (MELD) is a prospectively developed and validated chronic liver disease severity scoring system that uses a patient's laboratory values for –
Li Serum bilirubin
Serum creatinine
The international normalized ratio (INR) for prothrombin time to predict three month survival.
Patients with cirrhosis, and increasing MELD score is associated with increasing severity of hepatic dysfunction and increased three-month mortality risk.
Given its accuracy in predicting short-term survival among patients with cirrhosis, MELD was adopted by the United network for organ sharing (UNOS) in 2002 for prioritization or patients awaiting liver transplantation in the United states.

# 1275. Best test for lung fibrosis

a) Chest x-ray

b) MRI

c) HRCT

d) Biopsy

Correct Answer - C
Ans. is 'c' i.e., HRCT

- Lung fibrosis is a diffuse parenchymal lung disease.
- Idiopathic pulmonary fibrosis is the most common form of idiopathic interstitial pneumonia.
- We have already discussed that best investigation for interstitial lung disease is HRCT

**Estimated relative frequency of the interstitial lung disease**

| Diagnosis | Relative frequency, % |
|---|---|
| Idiopathic interstitial pneumonias | 40 |
| Idiopathic pulmonary fibrosis | 55 |
| Nonspecific interstitial pneumonia | 25 |
| Respiratory bronchiolitis-ILD and | 15 |
| Cryptogenic organizing pneumonia | 3 |
| Acute interstitial pneumonia | <1 |
| Occupational and environmental | 26 |
| Sarcoidosis | 10 |

| | |
|---|---|
| Sarcoidosis | 10 |
| Connective tissue diseases | 9 |
| Drug and radiation | 1 |
| Pulmonary hemorrhage syndromes | <1 |
| Other | 13 |

## 1276. Drug of choice for the treatment of acute gout in patients in whom NSAIDs are contraindicated is?

a) Colchicine

b) Allopurinol

c) Xyloric acid

d) Paracetamol

Correct Answer - A

**Ans. is 'a' i.e., Colchicine**

**Treatment of Gout**

1) *Acute gout*

- NSAIDs are the drugs of choice
- *Colchicine is the fastest acting drug.* However it is reserved for the patients in which NSAIDs are contraindicated, because colchicine can cause gastrointestinal disturbances.
- If neither NSAIDs nor colchicin are tolerated, oral prednisolone is used.
- *Allopurinol and uricosuric drugs (sulfinpyrazone, probenacid) are not effective in acute gout because they will not relieve symptoms as they don't have anti-inflammatory property.*

2) *Chronic gout*

- Allopurinal is the drug of choice.
- Other drugs are sulfinpyrazone and probenacid.

# 1277. All drugs used in treatment of acute gout except

a) Allopurinol

b) Aspirin

c) Colchicine

d) Naproxen

Correct Answer - A
Ans. is 'a' i.e., Allopurinol
**Management of gout**
**Treatment of acute gout**

- *To provide rapid and safe pain relief*

**Drugs used are :**
**i) NSAIDs:**

- *These are the most frequently used drugs to treat gout because they are so well tolerated.*
- Indomethacin is the agent of choice but other NSAIDs may be just as effective. Aspirin is usually avoided because low doses of aspirin aggravate hyperuricemia.

**ii) *Colchicinee:***

- *Colchicine is effective but less well tolerated than NSAIDs*

**iii) GlucocorticoidsQ***:*

- *Usually reserved for patients in whom colchicines or NSAIDs are contraindicated or ineffective.*

**Treatment of chronic gout** *(maintain serum urate levels at 5.0 mg/dl or less) AllopurinolQ:*

- *X*anthine oxidase inhibitor
- Agent of choice for most patients w*ith gouty'*

**Uricosuric agents**

- *P*robenecid2
- SulfinpyrazoneQ

**Treatment of gout according to the stage**

| | |
|---|---|
| Asymptomatic *hyperuricemia* | No treatment indicated, the causes should be determined and any associated problem should be addressed rigorously) |
| *Acute gouty arthritis* | NSAIDs or colchicines or glucocorticoid |
| *Intercritical period* | Prophylactic colchicines *(to reduce further attacks)* |
| *Acute tophoaecous gout* | Urate lowering drug *(allopurinol or probenecid, sulfinpyrinazole)* |

**1278.** **Which of the following endocrine tumors is most commonly seen in MEN I?**

a) Insulinoma

b) Gastrinoma

c) Glucagonoma

d) Somatostatmoma

Correct Answer - B

Amongst the options provided, gastrinomas are the most common enteropancreatic tumors associated with MEN I with insulinomas being the second most common.

**Ref:** Harrison's Principles of Internal Medicine, 17th Edition, Page 2358 & 2359; 16th/ 2232; Davidson's principles and practice of Medicine, 20th Edition, Chapter 20, Page 803

## 1279. Good syndrome is

a) Thymoma with immunodeficiency

b) Thymoma with M. Gravis

c) Thymoma with serum sickness

d) Thymoma with pure red cell aplasia

Correct Answer - A

Ans. is 'a' i.e., Thymoma with immunodeficiency

- Good's syndrome (thymoma with immunodeficiency) is a rare cause of combined B and T cell immunodeficiency in adults.

**Clinical features of Good's syndrome are :-**

- Increased susceptibility to bacterial infections with encapsulated organisms and opportunistic viral and fungal infection.

***The most consistent immunological abnormalities are** :-*

- Hypogammaglobulinaemia and
- *Reduced or absent B cells*

**Treatment**

- Resection of the thymoma and immunoglobulin replacement to maintain adequate through Ig*G values*

**1280. An Adult with asthma presents with asthma symptoms every day and wakes up in the night approximately 2 to 3 days in a week.**
**He can be classified as having :**

a) Intermittent Asthma

b) Mild Persistent Asthma

c) Moderate Persistent Asthma

d) Severe Persistent Asthma

Correct Answer - C
**Answer *is* C (Moderate Persistent Asthma):**
*'Giudelines for the diagnosis and management of Asthma' Summary Report 2007 (N1H Publication Number 08-5846); Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs 10TH/568,569,570*
*Moderate Persistent Asthma in an adult (>12 years) is defined as Day-Time Symptoms that occur daily and Night-Time Symptoms occurring more than 1 night per week but not every night.*

## 1281. In a Patient with clinical signs of Asthma which of the following tests will confirm the diagnosis:

a) Increase in FEV1/FVC

b) > 200 ml increase in FEVI after Methacholine

c) Diurnal variation in PEF > 20 Percent

d) Reduction of FEV I > 20 % after bronchodilators

Correct Answer - C

**Answer is C (Diurnal variation in PEF > 20 Percent):**

***Demonstrate Outflow Obstruction***

*Decreased $FEV_1$*

*Decreased PEF*

*Decreased $FEV_1$ /FVC*

*While respiratory symptoms suggest asthma, the sine qua non for the diagnosis of asthma is the presence of Reversible Airflow Obstruction and/or Airway Hyper-responsiveness or Increased Peak Expiratory Flow (PEF) Variability in subjects without airways obstruction.*

***Reversible Airflow Obstruction***

- *Reversibility is demonstrated by repeating spirometry results 15 minutes after administering a short acting bronchodilator*
- *> 12% reversibility in $FEV_1$*
- *>200 ml increase in Baseline $FEV_1$*
- *Positive Reversibility Results Strongly (Considered Diagnostic)*

***Increased Peak Expiratory Flow Rate (PEF) Variability***

- *Demonstration of Diurnal Variation in the Peak Expiratory Flow Rate*

- *A diurnal variation in PEF of more than 20 percent Strongly suggests a diagnosis of Asthma (Considered Diagnostic)*

***Airway Hyper-responsiveness***

- *Measured by Methacholine orHistamine challenge.*
- *Increasing Concentrations of Methacholine are administered and if the $FEV_1$ drops to >20 percent of baseline with any standard dose the test is consideredpositive.*
- *Positive test strongly suggests a diagnosis of Asthma*

**1282. A Patient with history of shortness of breath has Decreased FEV1/FVC Ratio, Normal DLCO. A 200 ml increase in baseline FEVI is observed 15 minutes after administration of bronchodilators. The likely diagnosis is**

a) Asthma

b) Chronic Bronchitis

c) Emphysema

d) Interstitial Lung Disease

Correct Answer - A
Ans. is 'a' i.e., Asthma

Diagnosis of Asthma require
Demonstration of Airways obstruction
Decrease in the ratio of FEVI/FVC
Demonstration of acute reversibility of airflow Administer 2-4 puffs of quick acting bronchodilator e.g., albuterol and repreat spirometry 10-15 min An increase in FEV1 of 12% or more accompanied by an absolute increase in FEV lof at least 20 ml
A bronchoprovocator (Methacholine) is administered hyperresponsiveness of the airway is demonstrated by reduction of FEV1 to 20%

## 1283. Patient diagnosed with HIV and Tuberculosis. How to start ATT and c-A.R.T

a) Start ATT first

b) Start cART first

c) Start both simultaneously

d) Start cART only

Correct Answer - A
Ans. is 'a' i.e., Start ATT first

- In a case when HIV and TB are diagnosed together ATT should be started first.
- ATT started first, because of IRIS (Immune Reconstitution Inflammatory syndrome).
- *If ART started first, it may improve CD4 cells at first, but later a previously acquired infection (TB, Herpes), responds with an overshelming inflammatory response that paradoxically makes the symptom of infection worse.*
- *Therefore, starting of ATT-2 weeks before ART, have shown to decrease the incidence of IRIS.*

## 1284. Most common cause of lung abscess

a) Staph aureus

b) Oral anaerobes

c) Klebsiella

d) Tuberculosis

Correct Answer - B
Ans. is 'b' i.e., Oral Anaerobes
Most nonspecific lung abscesses are presumed to be due to anaerobic bacteria.

# 1285. Normal CRP with elevated ESR seen in

a) RA

b) SLE

c) Scleroderma

d) Polymyalgia rheumatica

Correct Answer - B

**Ans. is 'b' i.e., SLE**

**Both ESR and CRP are markers of inflammation**

- Erythrocyte sedimentation rate or ESR is used to separate inflammation from non-inflammation.
- Another sign of inflammation is the rise in blood level of number of proteins called as acute phase proteins.
- *One of the proteins is C-reactive protein (CRP).*
- Like ESR and other acute phase proteins, CRP also goes up in inflammation.
- In systemic lupus however the level does not rise unless there is infection associated.
- *The normal response to active inflammatory disease is an increase in plasma CRP concentration. o For reasons that remain unclear tht response is either significantly lower in magnitude or entirely absent in **a** few inflammatory conditions.*
- *T*his has proven diagnostically useful because there are very few inflammatory conditions in which ESR is significantly raised (reflecting an inflammatory process) but plasma CRP is only slightly raised or even normal.
- One ofthese conditions is systemic lupus erythematosus (SLE or lupus), a relatively common chronic autoimmune disease that predominantly affects women of child-bearing age.

- When this inflamm*ation occurs in the lupus patient it is accompanied as expected by a marked increase in ESR. However in contrst to most other inflammatory condition, the plasma CRP remains resolutely normal. The combination of raised ESR and normal CRP is a useful diagnostic feature of SLE.*

**<u>Other disorders where CRP is not increased</u>**

- *Osteoarthritis, leukemia, anemia*
- *Polycythemia, viral infection*
- *Ulcerative colitis, pregnancy, estrogen*

## 1286. Incorrect about takayasu arteritis

a) Spares pulmonary artery

b) Renovascular hypertension

c) Blood pressure difference between left and right limbs

d) Strongly positive mantoux

Correct Answer - A

**Answer- A. Spares pulmonary artery**

Takayasu arteritis is granulomatous vasculitis of large and medium arteries. It is characterized principally by ocular disturbance and marked weakening of pulses in the upper extremities -> Pulseless disease.

It is also characterized by a strong predilection for aortic arch and its branches - Aortic arch syndrome.

Subclavian artery is involved most commonly

Other vessels involved are common carotid, abdominal aorta, coeliac, superior mesenteric, renal, vertebral, iliac, pulmonary and coronary arteries.

## 1287. Restrictive and constrictive pericarditis occurs together in

a) Radiation

b) Adriamycin

c) Amyloidosis

d) Post cardiotomy syndrome

Correct Answer - A
Ans. is 'a' i.e., Radiation

- *Progressive fibrosis can cause restrictive myocardial disease without dilation. Thoracic radiation, common for breast and lung cancer or mediastinal lymphoma, can produce early or late restrictive cardiomyopathy. Patients with radiation cardiomyopathy may present with a possible diagnosis of contrictive pericarditis, as the two conditions often coexist.*

## 1288. Vitamin not deficient in celiac disease is?

a) Vitamin D

b) Vitamin B 12

c) Folic acid

d) Vitamin A

Correct Answer - C
*Folk acid* REF: Sheila Crowe - 2010 page 384, Harrison 17th ed chapter 288
Vitamins deficient in celiac disease are:
1. Vitamin A
2. Vitamin D
3. Vitamin K
4. Vitamin B12

## 1289. Skip granulomatous lesions are seen in ?

a) Ulcerative colitis

b) Crohn's disease

c) Whipple's disease

d) Reiter's disease

Correct Answer - B
Ans. is 'b' i.e., Crohn's Disease
**Features of CD**

- In the affected segment, mesentric fat wraps around the bowel surface —> creeping fat
  **o** The intestinal wall is rubbery and thick, as a consequence of edema, inflammation, fibrosis, and hypertrophy of the muscularis propria —> lumen is almost always narrowed --> string sign on barium meal.
  o A classic feature of CD is the sharp demarcation of diseased bowel segments from adjucent uninvolved bowel. **o** When multiple bowel segments are involved, the intervening bowel is normal —> skip lesions. **o** There are *serpentine* linear ulcer along the axis of bowel.
- As the intervening mucosa tends to be relatively spared, the mucosa acquires a coarsely textured Cobblestone appearance.
  **o** Narrow fissures develop between the folds of the mucosa.
- Fissures can penetrate deeply through the bowel wall and leading to bowel adhesions and serositis. o Further extension of fissures leads to fistula or sinus tract formation.
  **o** There is transmural inflammation affecting all layers of bowel wall. Sarcoid like noncaseating granulomas may be present in all tissue

layers.
o Neutrophilic infiltration into the crypts results in formation of crypt abscess.
o Fibrosis of the submucosa, muscularis propria, and mucosa eventually leads to stricture formation.
There is an increased incidence of cancer of GIT in patients with long-standing CD, but the risk of cancer in CD is considerably less than in patients with chronic UC.

## 1290. Which of the following is associated with highest risk of Anaphylaxis

a) Iron dextran

b) Iron sucrose

c) Ferumoxytol

d) Iron Gluconate

Correct Answer - A
**Answer- A. Iron dextran**
The risk of anaphylaxis is maximally associated with high molecular weight dextran (not so with low molecular weight dextran).

## 1291. Rarest type of Von Willebrand disease :

a) vWD type 1

b) vWD type 2A

c) vWD type 2N

d) vWD type 3

Correct Answer - D
Ans. is 'd' i.e., vWD type 3

| Condition | Defect |
|---|---|
| vWD type 1 | Mild to moderate quantitative deficiency of vWF (ie, about 20-25% of normal levels). |
| vWD type 2A | The most common qualitative abnormality of vWF, is associated withselective loss of large and medium-sized multimers |
| vWD type 2B | Loss of only large multimers as mutant vWF spontaneously binds to Gplb in the absence of subendothelial contact |
| vWD type 2N | Characterized by a defect residing within the patient 's plasma vWF that interferes with its ability to bind FVIII |
| vWD type 2M | Involves qualitative variants with decreased platelet-dependent function not resulting from absence of highmolecular weight multimers |

| | |
|---|---|
| vWD type 3 | A severe, quantitative deficiency associated with very little or no detectable plasma or platelet vWF, have a profound bleeding disorder |

## 1292. A patient has ecchymosis and petechiae all over the body with no hepato-splenomegaly. All are true except

a) Increased megakaryocytes in bone narrow

b) Bleeding into the joints

c) Decreased platelet in blood

d) Disease resolves itself in 80% of Patients in 2-6

Correct Answer - B

Ans. is 'b' i.e., Bleeding into the joints

**Features of Acute and Chronic Idiopathic Thrombocytopenic Purpura**

| Feature | Acute ITP | Chronic ITP |
|---|---|---|
| Peak age of incidence | Children 2-6 year | Adults, 20-40 year |
| Sex predilection | None | 3:1 female to male |
| Antecedent infection | Common 1-2 week | Unusual |
| Onset of bleeding | Before Abrupt | Insidious |
| Hemorrhagic bullae in mouth | Present in severe cases | Usually absent |
| Platelet count | < 20000/4 | 3000-80000/8L |
| Eosinophilia and yphocytosis | Common | Rare |
| Spontaneous | Occurs in | Months or years |

| | | |
|---|---|---|
| Spontaneous remission | Occurs in 80% cases | Months or years Uncommon |

## 1293. Development of Lymphoma in Sjogren's syndrome is suggested by all of the following except

a) Persistent parotid gland enlargement

b) Cyoglobilinemia

c) Leukopenia

d) High C4 compement levels

Correct Answer - D

Ans. is 'd' i.e., High C4 complement levels

- Lymphoa is a well-known complication of Sjogren's syndrome Most lymphomas are extra-nodal, low grade marginal B cell lymphomas.
- Development of Lymphoma in Sjogren's syndrome is suggested by low C4 complement levels.

**<u>Lymphoma in Sjogren's syndrome</u>**

**The development ofLymphomas in patients with Sjogren syndrome is suggested by : -**

- Persistent parotid gland enlargement
- Purpura
- Leukopenia
- Cryoglobulinemia
- Low $C_4$ complement levels

# 1294. All of the following are true about Rheumatoid arthritis, except

a) PIP and DIP joints involved equally

b) Pathology limited to articular cartilage

c) Women are affected 3 times more commonly than men

d) 20% of patients have extra articular manifestations

Correct Answer - D

Ans. is 'd' i.e., 20% of patients have extra articular manifestations

**Association of Rheumatoid Arthritis with HLA DR-4**

- The class II major histocompatibility complex allele HLA-DR4 and related alleles are known to be a major genetic risk factor for Rheumatoid arthritis.
- Rheumatoid Arthritis is strongly associated with HLA DR4
- The genetic risk for Rheumatoid arthritis is associated with allelic variation in the HLA-DRBI "gene i.e. DRB1 0401, 04, 05".
- Some of the HLA DRB1 alleles bestow a high risk of disease

**Clinical features**:

- It occurs between the age of **20 to 50 years.**
- Women are affected about 3 times more commonly than men.
- Following presentations are common:

**a) An acute, symmetrical polyarthritis:**

- Pain and stiffness in multiple joints (at least four)
- Symptoms of **articular inflammation.**

**Common in-**

**MP joints of hand**

PIP joints of fingers

Wrists, knees, elbows, ankles

**1295.** **The pathognomonic finding in miliary TB is which of the following?**

a) Bone marrow infiltrations

b) Choroid tubercles

c) Miliary mottling in chest X-Ray

d) Histological finding in liver biopsy

Correct Answer - B

Eye examination may reveal choroidal tubercles, which are pathognomonic of miliary TB, seen in up to 30% of cases.

**Reference:**

Harrisons Principles of Internal Medicine, 18th Edition, Page 1349

## 1296. In AIDS patient presenting with fever, cough a diagnosis of pneumocystin pneumonia is best established by

a) CT scan chest

b) Bronchoalveolar lavage

c) Staining of intra-nuclear inclusion with silver staining

d) Aspiration and culture

Correct Answer - B

Ans. is 'b' i.e., Bronchoalveolar lavage

**Diagnosis of PCP requires**

- Demonstration of the organism in samples obtained from induced sputum.
- Bronchoalveolar lavage, transbronchial biopsy, or open-lung biopsy.
- If the histological examination fails :?
- u PCR is required to make the diagnosis

# 1297. Hemodialysis can be performed for long periods from the same site due to

a) Arteriovenous fistula reduces bacterial contamination of site

b) Arteriovenous fistula results in arterialization of vein

c) Arteriovenous fistula reduces chances of graft failure

d) Aretiovenous fistula facilitates small bore needles for high flow rates

Correct Answer - B

Ans. is 'b' i.e., Arteriovenous fistula results in arterialization of vein

**The tstu*/*a graft, or catheter *hemodialvsis is often referred to as a dialysis access.***

- A native fistula created by the anastomosis of an artery to a vein (e.g. the Bresica-Cimino fistula, in which the cephalic vein is anastomosed end-to-side to the radial artery) results in arterialization of the vein.
- This facilitates its subsequent use in the placement of large needles (typically 15 Gauge) to access the circulation.
- Fistulas have the highest long-term patency rate of all dialysis access options.
- The most important complication of arteriovenous grafts is thrombosis of the graft and graft failure, due principally to intimal hyperplasia at the anastomosis between the graft and recipient vein.
- Many patients undergo placement of an arteriovenous graft (i.e., the interposition of prosthetic material, usually polytetrafluoroethylene, between an artery and a vein) or a tunneled dialysis catheter.

## 1298. The most common neurological disorder seen in CRF patients

a) Dementia

b) Peripheral neuropathy

c) Bakes intestinal dilator.

d) Restless leg syndrome

Correct Answer - B
Ans. is 'b' i.e., Peripheral neuropathy

- Peripheral neuropathy is the most common neurological problem in CRF, which may be?
  *i)* *Uremic peripheral neuropathy* (due to uremia).
  *ii)* *More often a presenting feature of the cause of CRF Diabetic neuropathy (DM is the most common cause of CRF).*

# 1299. ECG image,U wave seen, patient is on furosemide & beta blocker. Diagnosis

a) Hypocalcemia

b) Hypokalemia

c) Hyperkalemia

d) Hypercalcemia

Correct Answer - B
Ans. is 'b' i.e., Hypokalemia
**E.C.G. manifestations of electrolyte disorders**
**Hyperkalemia**

- *A* tall peaked and symmetrical T-waves is the first change seen on ECG in patients with hyperkalemia. o RR interval lengthens and QRS duration increases.
- Flattening or disappearance of P wave.
- ST elevation.
- Widening of the QRS complexes due to a severe conduction delay and may become 'sine wave'.
- The progresion and the severity of the E. C. G change do not correlate well with the serum potassiam concentration.

**Hypokalemia**

- *S*imilar to hyperkalemia, hypokalemia produce changes on the E. C. G which are not necessary related to serum potassiam level.
- Depression of the ST segment
- Decrease in amplitude of T waves
- Increase in amplitude of U waves
- U and T wave merge in some cases to form a T-U wave which may be misdiagnosed as prolonged QT interval.
- P wave can become larger and wider and PR interval prolong

slightly.

- QRS duration may increase when hypokalemia becomes more severe.

**Hvpocalcemia**

- Prolongation of the QT interval
- *Due to prolongation of the phase 2 of the ventricular action potential and lengthening of the ST segment while the T wave (which correlate with time for repolarisation remains unaltered).*

**Hvpercalcemia**

- Shortening of the QT interval
- *(Primarily due to a decrease in phase 2 of the ventricular action potential and resultant decrease in ST segment duration).*

**lltpothermia**

- Causes slow impulse conduction through all cardial tissues resulting in :?

**Prolongation of all the ECG intervals**

- *RR*
- *PR*
- *QRS'*
- *QT*
- *There is also "elevation of the J point" (Only if the ST segment is unaltered producing characteristics T or osborne wave.)*

## 1300. In Zollinger Ellison syndrome what is raised?

a) Insulin

b) VIP

c) Gastrin

d) Glucagon

Correct Answer - C
Ans. is 'c' i.e., Gastrin
**Zollinger Ellison syndrome ?**

- Severe peptic ulcer disease secondary to gastric acid hypersecretion due to *unregulated gastrin release* from a non 13 cell endocrine tumour (gastrinoma), defines the components of Zollinger Ellison syndrome.

**Pathophysiology of Zollinger Ellison syndrome**

- The driving force responsible for clinical manifestations of Zollinger Ellison syndrome is *hypergastrinemia* originating from Gastrinoma (autonomus neoplasm, non [3 cell neoplasm)
- Gastrinoma
- Hyper gastrinemia
- Hyper acidemia
- Peptic ulcer, erosive esophagitis and diarrhoea

**Other important characteristic of Gastrinoma**

- **o** Over 80% of these tumours are seen in Gastrinoma triangle° **(triangle formed between duodenum and pancreas)** most of them are seen in the head of pancreas.
- o About $^{2}/_{3}$'of these tumours are malignant°.
- o About one half of these tumours are multiple°.

- o About one fourth of the patients have multiple endocrine neoplasia (MEN I) syndrome with tumours of parathyroid, pituitary and pancreatic islets being present.

  **<u>Remember</u> :**

  Most common site of gastrinoma's is → Duodenum (50-70%), (Pancreas 20-40%)

  Most common hormone to be secreted besides gastrin is → ACTH

  Most common site of peptic ulcers produced is → I$^{s}$' part of Duodenum.

  *Most valuable provocative test in injection tests. identifying patients with ZES is* → *The Secretin*

  Basal acid output is greater than 60% of out pu induced by maximal stimulation → BAO> MAO
- The term pancreatic endocrine tumour is misnomer because these tumours can occur either almost exclusively in the pancreas or at both pancreatic and extrapancreatic sites

## 1301. Menke's disease" is a disease of

a) Impaired zinc transport

b) Impaired copper transport

c) Impaired magnesium transport

d) Impaired molybdenum transport

Correct Answer - B

Ans. is 'b' i.e., Impaired copper transport

**Menke's disease is caused due to defect in the copper transport.**

- There is defect in the transport of copper present in the intestinal mucosa to the blood stream.
- The mucosal lining of intestine contains high level of copper bound to metallothionein protein.
- Rather than being transporated to bloodstream, the copper remained in the mucosa and was lost when intestinal cells were naturally soughed off.

**Menkes disease is caused due to defect in the "MNK" gene.**

- The protein normally function by moving copper from the intestinal mucosal cells into the blood stream, where it is hound by proteins such as albumin and transported to organs and tissues.

**Serum copper is critical for the functioning of several enzymes**

- Lysyl oxidase → It is important for the cross linking of collagen and elastin such that deficiencies lead to problems in connective tissues such as bones
- Cytochrome oxidase → Involved in temperature maintenance
- Tyrosinase → Necessary for pigmentation

**Clinical features of menkes disease**

- Growth retardation

- Coarse hair, brittle and ivory white (result of depigmentations). The hair fibres are twiisted and broken helically (kinky hair).
- Seizures
- Cerebral and cerebellar degeneration (postmortem analysis)
- Hypothermia
- Thrombosis
- Poor bone development
- Increased tendency towards aneurysms

## 1302. Anosmia is early clinical feature of

a) Alzheimer

b) Parkinson's disease

c) Huntington's chorea

d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above
**Main causes of anosmia**

- Main causes of anosmia
- Nasal.
- Smoking.
- Chronic rhinitis (allergic, atrophic, cocaine, infectious-Herpes, influenza).
- Overuse of nasal vasoconstrictors.
- Olfactory epithelium.
- Head injury with tearing of olfactory filaments
- Cranial surgery.
- Subarachnoid hemorrhage, meningitis.
- Toxic (organic solvents, certain antibiotics-am inoglycosides, tetracyclines, corticosteroids, methotrexate,
- opiates, 1-dopa).
- Metabolic (thiamine deficiency, adrenal and thyroid deficiency, cirrhosis, renal failure, menses).
- Wegener granulomatosis.
- Compressive and infiltrative lesions (craniopharyngioma, meningioma, aneurysm, meningoencephalocele).
- Degenerative disease (Parkinson, Alzheimer, Huntington
- Temporal lobe epilepsy.

- Malingering and hysteria

## 1303. Which of the following is the least common bacteria responsible for Acute Exacerbation of Chronic Bronchitis

a) Streptococcus pneumoniae

b) Moraxella catarrhalis

c) Haemophilus influenza

d) Staphylocccus aureus

Correct Answer - D

**Answer is D (Staphylocccus aureus):**

*The Global Initiative for Chronic Obstructive Lung Disease (GOLD); Report produced by the National Heart, Lung, and Blood Institute (NHLBI) and the World Health Organization (WHO)*

*Staphylococcus Aureus is not a common bacterial pathogen responsible for Acute Exacerbation of Chronic Bronchitis.*

**Common Bacterial Pathogens (30%-50%) Responsible for Acute Exacerbations of COPD**

- Haemophilus influenza
- Streptococcus pneumonia
- Moraxella catarrhalis

*Pseudomonas aeruginosa and Enterobacteriaceae are also commonly isolated, particularly from patients with severe COPD.*

**Acute Exacerbation of COPD: Bacterial Infections**

The GOLD, the NHLBI and the WHO, defines exacerbation of COPD as acute increase in symptoms beyond normal day-to-day variation. This generally includes one or more of the following cardinal symptoms.

- Cough increases in frequency and severity

- Sputum production increases in volume and/or changes character
- Dyspnea increases
- Constitutional symptoms, decrease in pulmonary function, and tachypnea are variably present during an exacerbation, but the CXR is usually unchanged.
- In the presence of severe underlying airflow obstruction, exacerbation can cause respiratory failure and death.
- It is estimated that 70 to 80% of exacerbations of COPD are due to respiratory infections.
- The remaining 20 to 30% are due to environmental pollution or have an unknown etiology. Viral and bacterial infections cause most exacerbations
- Bacterial infections appear to trigger 33% to 50% of COPD exacerbations.
- Non-typeable H. influenzae, M. catarrhalis, and S. pneumoniae are the bacteria most frequently isolated bronchoscopically from patients having an exacerbation of COPD
- Pseudomonas aeruginosa and other members of family Enterobacteriaceae are also commonly isolated, particularly from patients with severe COPD.
- Exacerbations of COPD are strongly associated with acquisition of new strain of H. influenzae, M. catarrhalis, S. pneumoniae, or P. aeruginosa.
- As a result, it has been proposed that acquisition of new bacterial strain plays central role in the pathogenesis of an exacerbation.
- The idea that exacerbations of COPD are due to acquisition of new strain of bacteria has largely replaced older hypothesis that increases in concentration of colonizing bacteria are the primary cause of exacerbations.

## 1304. Pseudo-hemoptysis is seen mostly with

a) Streptococcus

b) E. coli

c) Serratia marcescens

d) R.S.V

Correct Answer - C
Ans. is 'C' i.e., Serratia marcesens

- Pseudo-hemoptysis is expectoration of blood other than the respiratory tract i.e. GIT or blood draining from the larynx.
- Serratia marcescens is a cause of pseudohemoptysis.

## 1305. Finger is glove sign is seen in

a) Pulmonary alveolar Proteinosis

b) Pneumocystis Carinii

c) Tuberculosis

d) Bronchocele

Correct Answer - D
Ans. is 'd' i.e., Bronchocele
**Rabbit ear appearance**

- Mickey mouse appearance
- Toothpaste shaped opacities
- Y-shaped opacities
- V-shaped opacities

**Aetiology**
**Obstructive**

- *I*n bronchial obstruction, the portion of the bronchus distal to the obstruction is dilated with the presence of mucous secretions (mucus plugging). Causes of bronchial obstruction include :
- Bronchial hamartoma
- Bronchial lipoma
- Bronchial carcinoid
- Bronchogenic carcinoma
- Congenital bronchial atresia (rarely)

**Non obstructive**

- Causes include .-
- Asthma
- Allergic bronchopulmonary aspergillosis (ABPA)
- Cystic fibrosis

## 1306. Which of the following disorders is least likely associated with progression to lymphoma

a) Sjogren's syndrome

b) Araxia telangiectasia

c) Severe combined immunodeficiency

d) Lynch II syndrome

Correct Answer - C
Ans. is 'c' i.e., Severe combined immunodeficiency

| Choice | Cancers associated |
|---|---|
| Sjogren syndrome | NHL mainly MALT-oma involving salivary glands>stomach |
| Ataxia telengectasia | Elevated incidence of cancers, approximately 100-fold in comparison to the general population. In children, more than 85% of neoplasm cases are acute lymphocytic leukemia or lymphoma. In adults with ataxia-telangiectaisa, solid tumors are more frequent |
| | Gastrointestinal cancer associated with |

| | |
|---|---|
| Lynch-II syndrome | associated with endometrial/ovarian carcinoma. Early onset brain tumor and lymphoma also seen in children |

## 1307. Woman of 30-years with Raynaud's phenomenon, polyarthritis, dysphagia of 5-years and mild Sclerodactyl, blood showing Anti-centromere antibody positive, the likely cause is

a) CREST

b) Mixed connective tissue disorder

c) SLE

d) Rheumatoid arthritis

Correct Answer - A
Ans. is 'a' i.e., CREST

- The disease is divided into two categories :?

1) Diffuse scleroderma
. There is wide-spread involvement of skin at onset. There is *rapid progression with early visceral involvement.* It is associated with Anti-DNA topoisomerase (anti-Scl 70) antibodies.
2) Limited (localized) scleroderma (morphea)
. Skin involvement is confined to finges, forearm and face. It is associated with slow progression and late visceral involvement. Some patients develop CREST syndrome *(Cacinosis, Raynaud's phenomenon, esophageal dysmotility, sclerodactyly, and telangiactasia).* It is associated with anticentromere antibodies.

# 1308. All of the following are features of Scleroderma are following except

a) Diffuse periosteal reaction

b) Esophageal dysmotility

c) Erosion of tip of phalanges

d) Lung Nodular infiltrates

Correct Answer - A

Ans. is 'a' i.e., Diffuse periosteal reaction

**Skin involvement in systemic sclerosis**

- Skin involvement is a nearly universal feature of systemic sclerosis (SSc).
- It is characterized by variable extent and severity of skin. Thickening and hardening.
- The fingers, hands, and face are generally the earliest areas of the body involved.
- Edematous swelling and erythema may preceede skin induration.

**Other prominent skin manifestations include :**

- Pruritus in the early stages
- Edema in the early stages
- Sclerodactyly
- Digital ulcers
- Pitting at the fingertips
- Telangiectasia
- Calcinosis cutis

**Radiographs of the hands may reveal**

- Soft tissue calcifications (calcinosis cutis).
- Resorption of the distal phalangeal tufts (acro-osteolysis).

**Less common radiographic findings are :**

- Articular erosions
- Joint space narrowing
- Demineralization
- *The symptoms of the female and presence of antinuclear antibody points towards the diagnosis of systemic sclerosis. It is a case of systemic sclerosis or scleroderma.*

  **The clues to the diagnosis of scleroderma are :**
- Sclerodactyly
- Raynaud's phenomenon
- Dysphagia
- Presence of antinuclear antibody
- *Though systemic sclerosis is a multisyst*em disease, the two most distinguishing features of systemic sclerosis are:

  **o *Striking cutaneous changes***
- *Notable skin thickening. This is the most easily recognized manifestation of scleroderma.*

  ***Raynaud's phenomenon***
- This is the first manifestation of disease in almost every patients.

  **Dysphagia**
- Attributable to esophageal fibrosis and its resultant hypomotlity is present in more than 50% of patients.
- Remember,
- Whenever skin thickening is present along with Raynaud's phenomenon, it is almost always a case of scleroderma".
- These two features are not present in any other multisystem disease whose clinical features overlap with that of systemic sclerosis e.g. SLE, rheumatoid arthritis, inflammatory myopathy, Sjogren syndrome*".*
- Although skin changes and Raynaud's phenomenon are the major diagnostic clues, scleroderma *is* a multisystem disease that most commonly targets *peripheral circulation, muscles, joints, gastrointestinal tract, lung, heart and kidney.*
- So, the symptoms encountered in early presentation of scleroderma include musculoskeletal discomfort, fatigue, weight loss, and heart burn and dysphagia associated with gastroesophageal reflex disease (GERD).
- When these symptoms are accompanied by the skin thickness and

Raynaud c phenomenon, diagnosis ofscleroderma

- should be considered.
- Role of autoantibodies in the diagnosis of scleroderma
- *Au*toantibodies are found in nearly every patient with scleroderma (sensitivity >95%), but they are not specific for scleroderma0.
- Scleroderma is associated with wide array of autoantibodies.

**<u>Two ANA'S which are more or less unique to scleroderma are:</u>**

| | |
|---|---|
| **Antitopoisomerase antibody (20-40%)** | **Seen in patients with diffuse systemic sclerosis**<br>*Patients with this autoantibody are more likely to havepulmonary fibrosis and peripheral vascular disease*<br><br>*Patients with these autoantibodies have poor prognosis* |
| *Anticentromere antibody* (20-40%) | *These autoantibodies are seen in patients with limited systemic sclerosis* |

## 1309. Which of the following is not a sign of upper motor neuron paralysis

a) Babinski sign

b) Spastic paralysis

c) Denervation potential in EMG

d) Exaggeration of tendon reflexes

Correct Answer - C
Ans. is 'c' i.e., Denervation potential in EMG
**Difference between upper and lower motor neuron paralysis**

| Upper motor neuron paralysis | Lower motor neuron paralysis |
|---|---|
| Muscles affected in groups never individual muscles | Individual muscles may be affected |
| o Atrophy slight and due to disuse | Atrophy pronounced up to 70% of the total bulk |
| Spasticity with hyperactivity of the tendon reflexes and | Flaccidity and hypotonia[Q] of affected muscles with loss of tendon reflexes |
| Extensor plantar reflex (Babinski sign) | Plantar reflex if present is of normal flexor type |

| | |
|---|---|
| (Babinski sign) | |
| Fascicular twitches absent | Fasciculation may be present |
| Normal nerve conduction studies; no denervation potentials in E.M.G. | Abnormal nerve conduction studies; denervation potential (fibrillations, fasciculations positive sharp waves) in EMG |

## 1310. Involvement of pyramidal tract leads to all of the following except

a) Spasticity

b) Fasciculation

c) Hyper-reflexia

d) Positive Babinski sign

Correct Answer - B
Answer *is* B (Fasciculation):
*Fasciculations are a feature of Lower Motor Neuron Lesions. Involvement of Pyramidal tract indicates an Upper Motor Neuron Lesion. Hypertonia with Spasticity, Hyper-reflexia and a Positive Babinski Sign with an Extensor Planter response are all features of an upper motor neuron lesion (Pyramidal Tract Lesion).*

## 1311. Most common oral infection in diabetes mellitus

a) Candida

b) Aspergillus

c) Streptococcus

d) Stphylococcus

Correct Answer - A
Ans. is 'a' i.e., Candida

- Individuals with DM have a greater frequency and severity of the infection. The reasons for this include incompletely defined abnormalities in cell-mediated immunity and phagocyte function associated with hyperglycemia, as well as diminished vascularization. Hyperglycemia aids the colonization and growth of a variety of organisms (candida and other fun*gal species).*

## 1312. Doughy skin and woody induration of tongue is seen in

a) Hypernatremia

b) Hyponatremia

c) Hypokalemia

d) Hyperkalemia

Correct Answer - A
Ans. is 'a' i.e., Hypernatremia

- Because of intracellular water loss (hypernatremic dehydration), the pinched abdominal skin of a hypernatremic dehydrated patient has a "doughy" feel and there is dry woody tongue.

## 1313. All are features of hypernatremia except

a) Convulsions

b) Elevated intracranial tension

c) Periodic paralysis

d) Doughy skin

Correct Answer - C

Ans. is 'c' i.e., Periodic paralysis

- Periodic paralysis, is seen in hyponatermia

**<u>Clinical features of Hypernatremia</u> *:?***

- Most patients with hypernatremia are dehydrated and have the typical signs and symptoms of dehydration.
- Hypernatremia even without dehydration causes central nervous system symptoms that tend to parallel the degree of sodium elevation and the acuity of the increase.
- Patients are irritable, restless weak and lethargic
- Some have high pitched cry and hyperpnea.
- Alert patient are very thirsty.
- Hypernatremia causes fever although many patients have underlying process that contributes to the fever
- Except for dehydration, there is no clear direct effect of hypernatremia on other organs or tissues except the brain.

**<u>Complication of hypernatremia</u> :?**

- Brain hemorrhage is the most devastating consequence of hypernatremia. As the extracellular osmolarity increases water moves out of brain cells, resulting in decrease in brain volume. This can result in tearing of intra cerebral veins and bridging vessels as the brain moves away from the skull and the meninges. Patient may have subarachnoid, subdural and parenchymal hemorrhage.

- Seizure and coma are possible sequale of the hemorrh*age even though seizures are more common during t/t.*
- Thrombotic complications are common in severe hypernatremic dehydration and include stroke, dural sinus thrombosis, peripheral thrombosis and renal vein thrombosis.
- The in*tracranial tension can be increased due to hemorrhage*

## 1314. Which of the following is MOST commonly affected by Crohn's Disease

a) Cecum

b) Rectum

c) Sigmoid colon

d) Terminal Ileum

Correct Answer - D
Ans. is 'd' i.e., Terminal ileum
**Inflammatory Bowel disease site of involvement**

| **Crohn's** | **Ulcerative cocitis** |
|---|---|
| Any part of the Gout from mouth to anus | Limited to the colon |
| *Most commonly affected is small intestine particularly ileum* | Involves the entire colon starting from the rectum (retrograde manner) |
| *Terminal ileitis or* | Rectum is most commonly affected |
| *Granulomatous colitis* | Ileum not involved may get involvedmay get involved in some cases |

| | |
|---|---|
| | cases<br>(backwash ileitis). |
| Rectum spared<br>*Full thickness of the intestine involved but in patchy manner skip lesions* | |

## 1315. Vitamin B level in chronic myeloid leukemia is

a) Elevated'

b) Decreased

c) Normal

d) Markedly

Correct Answer - A
Ans. is 'a' i.e., Elevated
**CML there will be rise in**

- *$B_1$, level*
- LDH level
- *And decreased levels of ALP.*

## 1316. Which is the most common organ involved in sarcoidosis

a) Lung

b) Liver

c) CNS

d) Eye

Correct Answer - A
Ans. is 'a' i.e., Lung

- Following organs are commonly affected :?
  1) Lung and lymph nodes (95%)
  2) Skin (24%-43%)
  3) Eye (12-29%

## 1317. Following statements about sarcoidosis is false

a) Elevated level of angiotensin converting enzyme (ACE)

b) Bilateral parotid enlargement is the rule

c) Pleural effusion is common

d) Facial nerve palsy may be seen

Correct Answer - C

Ans. is 'c' i.e., Pleural effusion is common

**Diffuse Effusion is an uncommon atypical manifestation in Sarcoidosis reported in up to 5% of patients.**

- Parotid enlargement is a classic feature of sarcoidosis and bilateral involvement is the rule
- Neurological disease is reported in 5-10% of patients with sarcoidosis
- Facial nerve palsy is the single most common neurological manifestation of sarcoidosis seen in up to 50% of patients with Neurosarcoidosis.
- Angiotensin converting enzyme (ACE) levels are raised in sarcoidosis

**<u>Lung involvement in sarcoidosis</u>**

- *Most common involved organ (90%).*
- *Characterized by B/L hilar adenopathy.*
- *Cavitations are rare*
- *Pleural effusion are rare (1-2%)*

## 1318. Following statements about sarcoidosis is false

a) The first manifestation of the disease is an accumulation of mononuclear inflammatory cells, mostly CD8 + THI lymphocytes in affected organs

b) The Heerfordt-Waldenstrom syndrome describes individuals with fever, parotid enlargement, anterior uveitis, and facial nerve palsy

c) Elevated level of angiotensin converting enzyme (ACE) are a feature

d) Bilateral parotid involment is the rule

Correct Answer - A
Ans. is 'a' i.e., The first manifestation of the disease is an accumulation of mononuclear inflammatory cells, mostly CD8 + THI lymphocytes in affected organs

## 1319. The most common cause of seizures in a patient of AIDS is

a) Toxoplasmosis

b) Cryptococcal meningitis

c) Progressive multifocal leucoencephalopathy

d) CNS lymphoma

Correct Answer - A
Ans. is 'a' i.e., Toxoplasmosis
**Neurological manifestations of H.I.V.**

- *AIDS dementia complex (HIV encephalopathy) is a result of direct effects of HIV on CNS* (not an opportunistic *disease). It is subcortical dementia.*
- *Most common cause of seizures —> Toxoplasma*
- *Most common cause of meningitis —> Cryptococcus*
- *M.C. cause of focal neurological deficit —> Toxoplasma*
- *Toxoplasmosis is the most common CNS infection in AIDS.*
- *CNS lymphoma and prograssive multifocal leukoencephalopathy may occur.*

## 1320. Gene responsible for resistance to rifampicin

a) Rpo B gene

b) Kat G gene

c) Rpm B gene

d) Emb B gene

Correct Answer - A
Ans. is 'a' i.e., Rpo B gene

| **ATT Drug** | **Gene responsible for drug resistance** |
|---|---|
| INH | inhA and Kat G gene |
| Ethambutol | emb B gene |
| Rifampicin | rpoB gene |
| Pyrazinamide | pncA gene |

## 1321. Bechterews disease also known as

a) Rheumatoid arthritis

b) Ankylosing spondylitis

c) Osteoarthritis

d) Syphilitic arthritis

Correct Answer - B

Ans. is 'b' i.e., Ankylosing spondylitis

**ANKYLOSING SPONDYLITIS (MARIE - STRUMPELL DISEASE)**

- Ankylosing spondylitis is a chronic progressive inflammatory disease of the sacroiliac joints and the axial skeleton.
- Prototype of seronegative (absence of rheumatoid factor) spondyloarthropathies.
- Inflammatory disorder of unknown cause.
- *Usually begins in the second or third decade with a median age of 23, in 5% symptoms begin after 40.* o *Male to female ratio is 2-3 : 1*
- Strong correlation with HLA-B27
- *90-95% of cases are positive for HLA B27.*

**Joints involved in ankvlosing spondylitis**

- Ankylosing spondylitis primarily affects axial skeleton.
- *The disease usually begins in the sacro-iliac joints and usually extends upwards to involve the lumbar, thoracic, and often cervical spine.*
- In the worst cases the hips or shoulders are also affected. Hip joint is the most commonly affected peripheral joint. o Rarely knee (Ebenzar 4$^{th}$ie 593) and ankle (Apley's 9$^{th}$/e 67) are also involved.

**Clinical features**

- Low back pain of insidious onset
- Duration usually less than 3 months

- *Significant morning stiffness and improvement with exercise* o *Limited chest expansion*
- Diffuse tenderness over the spine and sacroiliac joints
- Loss of lumbar lordosis, increased thoracic kyphosis
- Decreased spinal movements (especially extension) in all directions.

**Radiological features of ankvlosing spondvlitis**

- Radiographic evidence of sacroiliac joint is the most consistent finding in ankylosing spondylitis and is crucial for diagnosis. The findings are :?
- *Sclerosis of the articulating surfaces of SI joints*
- Widening of the sacroiliac joint space
- Bony ankylosis of the sacroiliac joints
- Calcification of the sacroiliac ligament and sacro-tuberous ligaments
- *Evidence of enthesopathy - calcification at the attachment of the muscles, tendons and ligaments, particularly around the pelvis and around the heel.*

**o X-ray of lumbar spine may show :-**

- Squaring of vertebrae : The normal anterior concavity of the vertebral body is lost because of calcification of the anterior longitudinal ligament.
- Loss of the lumbar lordosis
- Bridging `osteophytes' (syndesmophytes)
- Bamboo spine appearance

## 1322. The treatment options for patients with RRMS (relapsing-remitting multiple sclerosis) are all except

a) IFN - 1 b

b) IFN - 1 a

c) Glatiramer acetate

d) TNF - a

Correct Answer - D
Ans. is 'd' i.e., TNF - a

- Treatment of RRMS is divided into:-

*i)* *In acute attack:* Corticosteroids are given

*ii)* *Prophylaxis of acute attack (relapse) during remission:* Disease modifying agents for MS are used to reduce the biological activity. Treatment is started by *IFN-P la or IFN-[31b or Glatiramer or fingalimod.* If there is poor response or intolerance to these drugs, Natalizumab is started.

## 1323. DOC for Tourette syndrome

a) Haloperidol

b) Valproate

c) B complex

d) Clonidine

Correct Answer - D
Ans. is 'd' i.e., Clonidine

- Earlier Haloperidol was considered as DOC for Tourette syndrome.
- Clonidine is considered as DOC for Tourette syndrome

# Treatment

There's no cure for Tourette syndrome. Treatment is aimed at controlling tics that interfere with everyday activities and functioning. When tics aren't severe, treatment might not be necessary.

## Medication

- **Medications that block or lessen dopamine.** Fluphenazine, haloperidol (Haldol), risperidone (Risperdal) and pimozide (Orap) can help control tics.
- **Botulinum (Botox) injections**
- **Central adrenergic inhibitors.** Medications such as clonidine (Catapres, Kapvay) and guanfacine (Intuniv) — typically prescribed for high blood pressure — might help control behavioral symptoms such as impulse control problems and rage attacks.
- **Antidepressants.** Fluoxetine (Prozac, Sarafem, others)
- **Antiseizure medications.**

## Therapy

- **Behavior therapy.** Cognitive Behavioral Interventions for Tics, including habit-reversal training, can help you monitor tics, identify premonitory urges and learn to voluntarily move in a way that's incompatible with the tic.
- **Psychotherapy.** In addition to helping you cope with Tourette syndrome, psychotherapy can help with accompanying problems, such as ADHD, obsessions, depression or anxiety.
- **Deep brain stimulation (DBS).** For severe tics that don't respond to other treatment, DBS might help. DBS involves implanting a battery-operated medical device in the brain to deliver electrical stimulation to targeted areas that control movement.

## 1324. SSPE is not diagnosed by

a) EEG

b) Antibodies to measles in CSF

c) Antibodies to measles in blood

d) Antigen in brain biopsy

Correct Answer - C

**Ans. is 'c' i.e., Antibodies to measles in blood [Ref. Nelson l8n/e chapter 2431]**

The diagnosis of SSPE can be establisheil throughlt documentation of a compatible clinical course and at least I of the following supportingfindings.

Measles antibody detected in CSF.

Characteristic electroencephalographic findings.

Typical histologic fndings and/or isolation of viurs or viral antigen in brain tissue obtained by biopsy or post-mortem examination.

CSF analysis reveals normal cells but elevated IgG and IgM antibody titers in dilutions of >1.8. Electroencephaloraphic patterns are normal in stagel, but in the myclonic phase suppression-burst episodes are seen that are characteristic ofbut not pathognomic for,SSPE. Brain biopsy is no longer routinely indicated for diagnosis o/SSPE.

## 1325. Bronchiectasis Sicca is seen with

a) Tuberculosis

b) Pertussis

c) Cystic fibrosis

d) Kartagener syndrome

Correct Answer - A
**Ans. is 'a' i.e., Tuberculosis**
**Bronchiectasis Sicca or Dry Bronchiectasis is typically associated with Tuberculosis.**

- Tuberculosis is associted with a type of dry bronchiectasis called Bronchiectasis Sicca, which is predominantly seen in upper lobes.
- Dry Bronchiectasis (Bronchiectasis Sicca) is typically characterized by absence of copious amount of sputum which is usually a hall mark of bronchiectasis.
- Dry cough associated with hemoptysis is the typical presentation
- Endobronchial tuberculosis commonly leads to bronchiectasis, either from bronchial stenosis or secondary traction from fibrosis. Traction bronchiectasis characteristically affects peripheral bronchi (which lack cartilage support) in areas of end-stage fibrosis

## 1326. Brock's Syndrome is

a) Bronchiectasis Sicca

b) Middle Labe Bronchiectasis

c) Kartagener's Syndrome

d) Sarcoidosis

Correct Answer - B
Ans. is 'b' i.e., Middle Lobe Bronchiectasis
**Brock's Syndrome**

- Right middle lobe bronchiectasis occurring as a late sequel ofprimaiy tuberculosis is known as Brock's syndrome or middle lobe syndrome.
- Brock's syndrome is believed to be caused by pressure of lymph nodes in primary tuberculosis on the middle lobe bronchus.
- It has been described as a typical outcome of hilar node involvement by tuberculosis in childhood.
- This term is also applied to recurrent atelectasis of the right middle lobe in the absence of endobronchial obstruction.
- Bronchiectasis develops after recurrent episodes of atelectasis and fibrosis

## 1327. Upper lobe bronchiectasis is seen in which disease?

a) Cystic fibrosis

b) Aspergilloma

c) HIV

d) Bronchogenic carcinoma

Correct Answer - A

**Answer- A. Cystic fibrosis**

- Upper lobe bronchiectasis-
- Cystic fibrosis
- Tuberculosis
- Non tuberculous mycobacterial infections

## 1328. Bilateral Painless parotid enlargement is seen in all except

a) Mumps

b) Alcoholics

c) Sarcoidosis

d) Diabetes mellitus

Correct Answer - A
Ans. is 'a' i.e., Mumps
**Bilateral parotid enlargement is seen in**

| **Viral infection** | **Metabolic causes** | **Endocrinal** | **Sarcoidosis** |
|---|---|---|---|
| Mumps | Diabetes mcuitus | Gonadal | Amyloidosis |
| Influenza | Hyperlipoproteinemia | hypofunction | Sjogren's syndrome |
| Epstein barr virus | Chronic pancreatitis | Acromegaly | |
| Coxackie virus A | Hepatic cirrhosis | | |
| CMV | | | |
| HIV | | | |

## 1329. Therapeutic hypothermia is of benefit in preventing neurological complications in

a) Sepsis

b) Poly-trauma

c) Cardiac arrest

d) Ischemic stroke

Correct Answer - C

Ans. is 'c' i.e., Cardiac arrest

- Inducing mild therapeutic hypothermia in selected patients surviving out-of-hospital sudden cardiac arrest can
- significantly improve rates of long-term neurologically intact survival and may prove to be one of the important
- clinical advancements in the science of resuscitation.

**The types of medical events that hypothermic therapies may effectively treat fall into four primary categories:**

- Cardiac arrest
- Ischemic stroke
- Trumatic brain or spinal cord injury without fever.
- Neurogenic fever following brain trauma

# 1330. Distribution of weakness in Pyrimidal tract lesions?

a) Extensors more than flexors in lower limb

b) Flexors more than extensors in upper limb

c) Antigravity muscles are affected

d) Antigravity muscles are spared

Correct Answer - D

Ans. is 'd' i.e., Antigravity muscles are spared

**The following clinical features characterize a UMN lesion:**

**Increased tone (spasticitv)**

- *Initia*lly, UMN weakness may be flaccid, with absent or diminished deep tendon reflexes. There is little understanding of the reasons behind this initial flaccidity and it is often referred to as 'shock'. Increased tone of a UMN type is called spasticity. It may develop several hours, days or even weeks after the initial lesion has occurred. Spasticity is manifested by :

**Spastic catch'** *:*

- *M*ild spasticity may be detected as a resistance to passive movement or 'catch' in the pronators on passive supination of the forearm and in the flexors of the hand/forearm on extension of the wrist/elbow.

**The 'clasp-knife' phenomenon:**

- In more severe lesions, following strong resistance to passive flexion of the knee or extension of the elbow, there is a sudden relaxation of the extensor muscles of the leg and flexor muscles *in the arm.*

**Clonus:**

- *Rhythmic involuntary muscular contractions follow an abruptly applied and sustained stretch stimulus, e.g. at the ankle following*

*sudden passive dorsiflexion of the foot.*

**`Pyramidal-pattern' weakness**

**The antigravity muscles are preferentially spared and stronger**

- T*he flexors of the upper limbs and the extensors of the lower limbs. The patient can develop a characteristic posture of flexed and pronated arms with clenched fingers, and extended and adducted legs with plantar flexion of the feet.*

***In upper extremite*is**

- *Relative sparing of the flexors*
- *More involvement of the extensor*

**In lower extremities**

- Predominant invovlement of the flexors with
- Relative sparing of the extensor or

**Absence of muscle wasting and fasciculations**

- *Focal muscle wasting andjasciculations are features of an LMN lesion. With chronic disuse, some loss of muscle bulk can occur after a UMN lesion, but this is rarely severe or focal.*

**Brisk tendon reflexes and extensor plantar responses**

- *The tendon reflexes are brisk. The cremasteric and abdominal or 'cutaneous' reflexes are depressed or absent. The plantar responses are extensor (upgoing toes' or 'p*ositive' babinski sign).
- Anti-gravity muscles are typically spared in pyramidal tract lesions.
- Weakness, in pyramidal tract lesions is often termed as 'pyramidal' in distribution affecting extensors more than flexors in the upper limb, and flexors more than extensors in the lower limb (Anti-gravity muscles are spare*d).*

Pyramidal weakness → Loss of power most marked in the extensors muscles in the arms and flexors in the legs

Proximal weakness → Shoulders, hips, trunks, neck and sometimes face. Associated with myopathy.

Distal weakness → Affects hands and feets. Associated with peripheral motor neuropathy.

Global weakness → Generalized weakness in limbs which may result from severe pathologies.

## 1331. Aldose reductase inhibitor drugs are useful in

a) Cataract

b) Diabetes mellitus

c) Hereditary fructose intolerance

d) Essential fructosuria

Correct Answer - B

Ans. is 'b' i.e., Diabetes mellitus

- *Ald*ose reductase catalyzes the NADPH-dependent conversion of glucose to sorbitol, the first step in polyol pathway of glucose metabolism.
- Aldose reductase i*nhibitors are a class of drugs being studied as a way to prevent eye and nerve damage in people with diabetes mellitus.*

***Examples of aldose reductase inhibitors include:***

- Tolrestat (withdrawn from market)
- Apalrestat
- Ranirestat
- Fidarestat

## 1332. Most common cause of hypernatremia

a) Adipsic diabetes insipidus

b) Carcinoid syndrome

c) Renal losses

d) Sweating

Correct Answer - C
Ans. is `c' i.e., Renal losses
**Major causes of hypernatremia**
**Unreplaced water loss (which requires an impairment in either thirst or access to water)**

- Insensible and sweat losses
- Gastrointestinal losses
- Central or nephrogenic diabetes insipidus o Osmotic diuresis
- Glucose in uncontrolled diabetes mellitus
- Urea in high-protein tube feedings
- Mannitol
- Hypothalamic lesions impairing thirst or osmoreceptor function
- Primary hypodipsia
- Reset osmostat in mineralocorticoid excess

**Water loss into cells**

- Severe exercise or seizures

**Sodioutn overload**

- Intake or administration of hypertonic sodium solutions

## 1333. Not a cause of hypernatremia

a) Adipsic diabetes insipidus

b) Decreased insensible losses

c) Nephrogenic diabetes insipidus

d) Carcinoid syndrome

Correct Answer - B
Ans. is 'b' i.e., Decreased insensible losses
**Major causes of hypernatremia**

- Unreplaced water loss (which requires an impairment in either thirst or access to water)
- Insensible and sweat losses
- Gastrointestinal losses
- Central or nephrogenic diabetes insipidus
- Osmotic diuresis
- Glucose in uncontrolled diabetes mellitus
- Urea in high-protein tube feedings
- Mannitol
- Hypothalamic lesions impairing thirst or osmoreceptor function
- Primary hypodipsia
- Reset osmostat in mineralocorticoid excess

**Water loss into cells**

- Severe exercise or seizures

**Sodioum overload**

- Intake or administration of hypertonic sodium solutions

## 1334. Hyponatremia is seen in

a) Hyperthyroidism

b) Hypothyroidism

c) Diabetes insipidus

d) Increased insensible losses

Correct Answer - B

Ans. is 'b' i.e., Hypothyroidism [RefHarrison's *18th*

- Hypothyroidism is characterised by low cardiac output leading to increased AVP production and resultant hyponatremia.
- *Addison disease must be ruled out in chronic cases of hyponatremia*

**Major causes of hyponatremia**

**Disorders in which ADH levels are elevated**

- Effective circulating volume depletion
- True volume depletion
- Heart failure
- Cirrhosis
- Thiazide diuretics
- Syndrome of inappropriate ADH secretion, including reset osmostat pattern
- Hormonal changes
- Adrenal insufficiency
- Hypothyroidism
- Pregnancy

**Disorders in which ADH levels may be appropriately suppressed**

- Advanced renal failure
- Primary polydipsia
- Beer drinker's potomama

**Hyponatremia with normal or elevated plasma osmolality**

- High plasma osmolality (effective osmols)
- Hyperglycemia
- Mannitol
- High plasma osmolality (ineffective osmols)
- Renal failure
- Alcohol intoxication with an elevated serum alcohlo concentration
- Normal plasma osmolality
- Psedohyponatremia (laboratory artifact)
- High triglycerides
- Chloestatic and obstructive jaundice (lipoprotein x)
- Multiple myeloma
- Absorption of irrigant solutions
- Glycine Sorbitol Mannitol

## 1335. Backwash ileitis is seen in

a) Ulcerative colitis

b) Crohn's disease

c) Colonic carcinoma

d) heal polyp

Correct Answer - A
Ans. is 'a' i.e., Ulcerative colitis

- *Ulce*rative colitis always involves the rectum and extends proximally in continuous fashion to involve part or all part of the colon.
- Involvement of terminal ileum in ulcerative colitis is called backwash ileitis

## 1336. What is true about ulcerative colitis ?

a) Involves rectum and then whole colon backwards

b) Involves only colon

c) Skip lesions seen

d) Ileum not involved

Correct Answer - A
**Ans. is- A. Involves rectum and then whole colon backwards**
**Ulcerative colitis** (**UC**) is a long-term condition that results in inflammation and ulcers of the colon and rectum.

## 1337. Which of the following is given to treat thrombocytopenia secondary to anti-cancer therapy and is known to stimulate progenitor megakaryocytes

a) Filgrastim

b) Oprelvekin

c) Erythropoietin

d) Anagrelide

Correct Answer - B
Ans. is 'b' i.e., Oprelvekin

- Oprelvekin ( IL-11) is used to prevent and treat thrombocytopenia.
- *[Ref Harrison's 18th chapter 85 and Katzung 11th 580-581]*

## 1338. Lambda - Panda sign is typically seen in

a) Sarcoidosis

b) Tuberculosis

c) Histoplasmosis

d) Leishmaniasis

Correct Answer - A
Ans. is 'a' i.e., Sarcoidosis
**Lambda sign and Panda sign on Gallium scan are typically described for sarcoidosis.**

- Active pulmonary and/or mediastinal sarcoidosis is gallium avid and a positive gallium scan can support the diagnosis of sarcoidosis. Typical patterns of uptake have been described as 'panda' and 'lambda' signs.
  Lambda sign → Formed from increased uptake in bilateral hilar and right paratracheal nodes
  Panda sign → *Formed from increased uptake in the parotids and lacrimal glands*
- A Lambda sign in combination with a so-called Panda sign (Lambda-Panda Sign) is a highly specific pattern for sarcoidosis.
- *The degree of uptake typically depends on the activity of disease and gallium scan is positive only in the setting of active parenchymal disease and negative in remission*

## 1339. All are indications for stopping effending ATT drug permanently except

a) Gout

b) Autoimmune thrombocytopenia

c) Optic neuritis

d) Hepatitis

Correct Answer - D
Ans. is 'd' i.e., Hepatitis

- *F*or patients with symptomatic hepatitis and those with marked (five to six fold) elevations in serum levels of aspartate aminotransferase, treatment should be immediately stopped and drugs reintroduced one at a time after liver function has returned to normal.
- Indications for stopping the A.T.T. permanently
- Hyperuricemia and arthralgia
- Optic neuritis
- Autoimmune thrombocytopenia

## 1340. Interferon gamma release assay measures IFN release against which M. TB antigen

a) ESAT-6

b) E SAT-7

c) CF-11

d) CF-12

Correct Answer - A
Ans. is 'a' i.e., ESAT-6
**3 *<u>Interferon-gamma release assays (IGRAs) are diagnostic tools for latent tuberculosis infection (LTBI).</u>***

- They are surrogate markers of Mycobacterium tuberculosis infection and indicate a cellular immune response to M. tuberculosis.
- *a IGRAs cannot distinguish between latent infection and active tuberculosis (TB) disease and should not be used for diagnosis of active TB, which is a microbiological diagnosis. A positive IGRA result may not necessarily indicate active TB, and a negative IGRA result may not rule out active TB .*
- *3 Because IGRAs are not affected by Bacille Calmette-Guerin (BCG) vaccination status, IGRAs are useful for evaluation of LTBI in BCG-vaccinated individuals, particularly in settings where BCG vaccination is administered after infancy or multiple (booster) BCG vaccinations are given.*

**<u>Assay antigens</u>**

- M. tuberculosis-specific antigens include :-
- Early secreted antigenic target 6 (ESAT-6) and
- Culture filtrate protein 10 (CFP-10).

- *These are encoded by genes located within the region of difference 1 (RD1) segment of the M. tuberculosis genome.*
- *They are more specific for M. tuberculosis than purified protein derivative (PPD) because they are not shared with any BCG vaccine strains or most species of NTM other than M marinum, M. kansasii, M szulgai, and M. flavescens.*

**Types of assays**

- Two IGRAs are available in many countries :-
- *The QuantiFERON-TB Gold In-Tube (QFT-GIT) assay, which has replaced the second-generation QuantiferonTB Gold (QFT-G) assay, and the T-SPOTTB assay.*
- *The QFT-GIT assay is an enzyme-linked immunosorbent assay (ELISA)-based, whole-blood test that uses peptides from three TB antigens i.e.,*
- CFP-10, and
- TB7.7) in an in-tube format
- The result is reported as quantification of interferon (IFN)-gamma in international units (IU) per mL.
- A newer assay, the QuantiFERON-TB Gold Plus (QFT-Plus), became available in 2015.
- *This test is available in Europe but not in North America. The QFT-Plus assay has two TB antigen tubes, unlike the QFT assay (which has a single TB antigen tube).*

**Sensitivity and specificity**

- *IGRAs* have specificity >95 percent for diagnosis of latent TB infection. The sensitivity for T-SPOTTB appears to be higher than for QFT-GIT or TST (approximately 90, 80, and 80 percent, respectively) [2]. The higher sensitivity of T-SPOTTB may be useful for evaluating individuals with immunosuppressive conditions.
- TST specificity is high in popul*ations not vaccinated with BCG (97 percent). Among populations where BCG is administered, it is much lower although variable (approximately 60 percent).*

## 1341. Muehrcke lines in nails are seen in

a) Nephrotic syndrome

b) Barrter syndrome

c) Nail patella syndrome

d) Acute tubular necrosis

Correct Answer - A
Ans. is 'a' i.e., Nephrotic syndrome

- Muehrcke's lines are characteristic of hypoalbuminemia. Nephrotic syndrome causes hypoalbunemia.

## 1342. Herpes simplex infection can lead to?

a) Frontal lobe infarction

b) Parietal lobe infarction

c) Temporal lobe infarction

d) Occipital neuralgia

Correct Answer - C
**Answer- C. Temporal lobe infarction**
Herpes simplex infection has a predilection for the involvement of Temporal lobe.
The lesions in HSV encephalitis are intense hemorrhagic necrosis of the inferior and medial temporal lobe and the mediorbital part of frontal lobes.

## 1343. Brain death is said to occur if there is:

***March 2008***

a) Absent spinal reflexes

b) Cortical death following widespread brain injury

c) Absence of brainstem reflexes

d) Core temperature of the body is below 35 degree C

Correct Answer - C

Ans. C: Absence of brainstem reflexes

Brainstem is responsible for the respiratory drive and mostly for the maintenance of BP. All motor outputs from the brain travel through the brainstem. Apart from smell and vision. All sensory traffic coming into the brain comes through the brainstem. The brainstem also mediates the cranial nerve reflexes. Hence a properly functioning brain stem is a precondition for full consciousness.

Irreversible brain damage and loss of brain function, is evidenced by cessation of breathing and other vital reflexes (mediated by brain stem), unresponsiveness to stimuli, absence of muscle activity, and a flat electroencephalogram for a specific length of time.

# 1344. Occupational Lung Disease commonly seen in Textile Industry Workers is:

a) Byssinosis

b) Bagassosis

c) Farmer's Lung

d) Asbestosis

Correct Answer - A
**Answer is A (Byssinosis)**
*Occupational Lung Disease in Textile Industry Workers (Cotton industry)*
*Byssinosis is an asthma-like condition caused by inhalation of cotton fiber dust over prolonged period of time.*
*Workers occupationally exposed to cotton dust (but also to flax, hemp or jute dust) in the production of yarns for textile and rope making are at risk of Byssinosis.*
*Exposure occurs throughout the manufacturing process but is most pronounced in the portions of the factory involved with the treatment of cotton before spinning (blowing, mixing, carding or straightening)*
*Byssinosis is more common during milling and processing of cotton than during spinning.*

## 1345. Duration of apnea in obstructive sleep apnea is

a) <10 sec

b) <20 sec

c) <30 sec

d) <60 sec

Correct Answer - A
Ans. is 'a' i.e., <10 sec
**Sleep apnea** ?

- o Sleep apnea is defined as intermittent cessation of airflow at the nose and mouth during sleep.
- o By convention apneas of at least 10 seconds duration have been considered important but in most patients the apneas are 20s to 30 seconds in duration and may be as long as 2-3 minutes.
- o Sleep apnea is of two types -

**Sleep apnea**

| **Obstructive sleep apnea** | **Central sleep apnea** |
|---|---|
| *Occurs due to occlusion of upperairway at the level of oropharynx* | *Occurs due to transient abolition ofthe central neural drive to the respiratory muscles* |
| *Conditions associated are adenotonsillar*hypertrophy, | *Primary and secondary central alveolar*hypoventilation syndrome, hypoxia (high altitude) |

| | |
|---|---|
| retrognathia, macroglossia*alcohol, obesity* | *cardiovascular disease, pulmonary congestion, central nervous system disease, prolonged circulation time.* |

**Clinical features of sleep apnea -**

- Excessive daytime sleepiness
- Cardiorespiratory disturbances which include
- Recurrent respiratory failure
- Pulmonary hypertension
- Heart failure
- Systemic hypertension 7 Chronic hypoventilation
- Polycythemia
- o Arterial blood gas analysis reveals hypoxemia and hypercapnia.

## 1346. Obstructive sleep apnoea may result in all of thefollowing except

a) Systemic hypertension

b) Pulmonary hypertension

c) Cardiac arrhythmia

d) Impotence

Correct Answer - C
Ans. is 'c' i.e., Cardiac arrhythmia

**Daytime function and cognition**

- *OSA is associated with excessive daytime sleepiness, inattention, and fatigue, which may impair daily function, induce or exacerbate cognitive deficits, and increase the likelihood of errors and accidents.*

**Cardiovascular morbidity**

- Patients wi*th OSA, are at increased risk for a broad range of cardiovascular morbidities, including systemic hypertension, pulmonary arterial hypertension, coronary artery disease, cardiac arrhythmias, heart failure, and stroke.*

**Metabolic syndrome and type 2 diabetes**

- Patients with OSA have an increased prevalence of insulin resistance and type 2 diabetes.

**Nonalcoholic fatty liver disease**

- Intermittent nocturnal hypoxia due to OSA may contribute to the development and severity of nonalcoholic fatty liver disease (NAFLD), independent of shared risk factors such as obesity.

**Perioperative complications**

- Patients with OSA may be at greater risk for perioperative complications such as postoperative oxygen desaturation, acute

respiratory failure, postoperative cardiac events, and intensive care unit transfers.

**Mortality**

- *Patients with untreated severe OSA (ie, AHI 30 events per hour) have a two- to three fold increased risk of all-cause mortality compared with individuals without OSA, indep*endent of other *risk factors such as obesity and cardiovascular disease.*

# 1347. Not true obstructive sleep appoea

a) Nocturnal asphyxia

b) Alcoholism is a cofactor

c) Prone to hypertension

d) Overnight oximetry is diagnostic to replace polysomnography

Correct Answer - D
Ans. is 'd' i.e., Overnight oximetry is diagnostic to replace polysomnography
**Cardinal features in adults include:**

- Obstructive apneas, hypopneas, or respiratory effort related arousals
- Daytime symptoms attributable to disrupted sleep, such as sleepiness, fatigue, or poor concentration
- Signs of disturbed sleep, such as snoring*, restlessness, or resuscitative snorts*

**Clinical presentation**

- *Most pa*tients with OSA first come to the attention of a clinician because the patient complains of daytime sleepiness, or the bed partner reports loud snoring, gasping, snorting, or interruptions in breathing while sleeping.
- Daytime sleepiness, distinct from fatigue, is a common feature of OSA
- Sleepiness is the inability to remain fully awake or alert during the wakefulness portion of the sleep-wake cycle.
- Snoring is the other common feature of OSA*. While snoring is associated with a sensitivity of 80 to 90 percent for the diagnosis of OSA, its specificity is below 50 percent.*

**Clinical features of obstructive sleep apnea (OSA)**

Daytime sleepiness Obesity

| | |
|---|---|
| Daytime sleepiness | Obesity |
| Nonrestorative sleep | Large neck circumference |
| Loud snoring | Systemic hypertension |
| Witnessed apneas by bed partner | Hypercapnia |
| Awakening with choking | Cardiovascular disease |
| Nocturnal restlessness | Cerebrovascular disease |
| Insomnia with frequent awakenings | Cardiac dysrhythmias |
| Lack of concentration | Narrow or "crowded" airway |
| Cognitive deficits | Pulmonary hypertension |
| Changes in mood | Cor pulmonale |
| Morning headaches | Polycythemia |
| Vivid, strange, or threatening dreams | Floppy eyelid syndrome |
| Gastroesophageal reflux | Nocturia |

**Polysomnography**

- *Full*-night, attended, in-laboratory polysomnography is considered the "gold-standard diagnostic" test for OSA.
- It involves monitoring the patient during a full night's sleep.
- Unattended, out of centre sleep "(OCST) may be used as an alternative to polysomnography for the diagnosis of OSA in patients with a high pre-test probability of moderate to severe OSA, provided there are no medical comorbidities such as heart failure that predispose to alternative or additional sleep related breathing disorders.
- The diagnosis of OSA is based upon the presence or absence of related symptoms, as well as the frequency of respiratory events

during sleep (ie, apneas, hypopneas, and respiratory effort related arousals IRERAsJ as measured by polysomnography or out-of-center sleep testing (OCST).

**In adults, the diagnosis of OSA is confirmed if either of the two conditions exists:**

- *There are "fil_y" or more predominantly obstructive respiratory events (obstructive and mixed apneas, hypopneas, or RERAs) per hour of sleep (for polysomnography) or recor*ding time (for OCST) in a patient with one or more of the following:
- Sleepiness, nonrestorative sleep, fatigue, or insomnia symptoms.
- Waking up with breath holding, gasping, or choking.
- Habitual snoring, breathing interruptions, or both noted by a bed partner or other observer
- Hypertension, mood disorder, cognitive dysfunction, coronary artery disease, stroke, congestive heart failure, atrial fibrillation, or type 2 diabetes mellitus
- There are 15 or more predominantly obstructive respiratory events (apneas, hypopneas, or RERAs) per hour of sleep (for polysomnography) or recording time (for OCST), regardless of the presence of associated symptom*s or comorbidities*

## 1348. Tophi in gout found in all regions except

a) Prepatellar bursae

b) Muscle

c) Helix of ear

d) Synovial membrane

Correct Answer - B
Ans. is 'b' i.e., Muscle
**Location of Tophi**

- They are classically located along the helix of the ear.
- Can also be seen in :-
- Fingers
- Toes
- Prepattelar bursa
- Olecranon
- Although gout typically cuases joint inflammation, it can also cause inflammation in other synovial-based structures, such as bursae and tendons.
- Tophi are collections of urate crystals in the soft tissues. They tend to develop after about a decade in untreated patients who develop chronic gouty arthritis.
- Tophi may develop earlier in older women, particularly those receiving diuretics.

## 1349. Early loss of bladder control is seen in

a) Conus Medullaris

b) Cauda Equina

c) Gullain Barre Syndrome

d) Amyotrophic Lateral Sclerosis

Correct Answer - A
Answer is A (Conus Medullaris):
***Harrison's 18th Loss of bladder control is an early and marked feature of conus medullaris.***

| **Feature** | **Conus Medullaris** | **Cauda Equina syndrome** | **GBS** | **AMLS** |
|---|---|---|---|---|
| *Bladder Involvement* | Early and Marked *'Bladder dysfunction is a prominent feature and comes early in the course of disease'* | Late and less marked *'Bladder involvement is a late presentation in cauda-equina syndrome* | Uncommon *'If bladder dysfunction a prominent feature and comes early in the course, diagnostic possibilities other than GBS should be* | Absent /uncommon *'Even* in late stages of the illness bowel and bladder functions are preserved' |

*considered*

# 1350. Subacture combined degeneration of cord is caused due to deficiency of

a) Vitamin B1

b) Vitamin B5

c) Vitamin B6

d) Vitamin B12

Correct Answer - D

Ans. is 'd' i.e., Vitamin B12

- Subacate combined degeneration of the spinal cord is the term used for the degeneration of the spinal cord due to vitamin $B_{12}$ deficiency.
- *The spinal cord, brain, optic nerves, peripheral nerves may all be affected in vitamin $B_{12}$ deficiency but the spinal cord is usually affected first and exclusively.*

**The tracts *mainly* involved in the spinal cord are: o *Posterior column***

- Corticospinal tract
- Later on peripheral nerves are involved

**Clinical features of vitamin B deficiency or subacute combined degeneration of the cord :**

- *Patient first notices mild general weakenss and paresthesia consisting of tingling 'pins and needle'.*
- *As the illness progresses the gait becomes unsteady and stiffness and weakenss of the limbs and legs develop. If the disease remains untreated ataxic paraplegia evolve.*
- *Sometimes there may be loss of superficial sensations, such as tactile, pain and thermal sensations, but these signs are rare.*
- *Loss of "vibration sense" is the most consistent sign and is usually*

*accompanied by loss of position sensee.*

- *Motor signs seen are:-*
- *Loss of strength in proximal limb muscles*
- *Spasticity, changes in tendon reflexes*
- *Clonus and extensor plantar responses*
- *Sometimes tendon reflexes may be absent[e] (due to involvement of peripheral nerve)* **o** *Gait is ataxic*

**Now,**

**<u>The Clinicopathological Correlation</u>**

| **Clinical features** | **Tracts involved** |
|---|---|
| *Paresthesia, inpairment of deep sensation and ataxia* | *Due to lesion in posterior column* |
| *Weakness, spasticity and increased tendon reflexes* | *Due to corticospinal tract involvement* |
| *Occasional findings of loss of pain and temperature* | *Due to spinothalamic tract involvement (rarely involved)* |
| *Distal and symmetrical impairmeat of superficial* | *Involvement of peripheral nerve (occassionally)* |

## 1351. Foot ulcers in diabetes are due to all except

a) Decreased immunity

b) Neuropathy

c) Microangiopathy

d) Macroangiopathy

Correct Answer - A

Ans. is 'a' i.e., Decreased immunity

- The reasons for the increased incidence of foot ulcers in DM involve the interaction of several pathogenic factors

***<u>Neuropathy (Microvascular complication)</u>***

- *Motor and sensory neuropathy lead to abnormal foot muscle mechanics and structural changes in the foot (hammertoe, claw toe deformity, prominent metatarsal heads, Charcot joint).*
- *Autonomic neuropathy*
- *Results in anhidrosis and altered superficial blood flow in the foot, which promote drying of the skin and fissure formation. PAD and poor wound healing impede the resolution of minor breaks in the skin, allowing them to enlarge and to become infected.*

***Abnormal foot biomechanics.***

- P.A.D. (Macrovascular complication)
- This leads to occlusive arterial disease that results in ischemia in the lower extremity and an increased risk of ulceration in diabetic patients.
- Poor wound healing.

**<u>Grades of diabetic foot ulcers</u>**

- Grade 0 skin intact but bony deformities produce a "foot at risk".
- Grade 1 localized, superficial ulcer.

- Grade 2 deep ulcer to tendon, bone, ligament, or joint.
- Grade 3 deep abscess, osteomyelitis
- Grade 4 gangrene of toes or forefoot
- Grade 5 gangrene of the entire foot

# 1352. Not a cause of Gynaecomastia

a) Hypothyroidism

b) Kallman

c) obesity

d) Klinefelter syndrome

Correct Answer - A

. Ans. is 'a' i.e., Hypothyroidism

**Causes of Gynaecomastia**

***Puberty***

- During puberty, the serum oestradiol rises to adult levels before testosterone, causing transient gynaecomastia. This normally resolves within six months to two years.

**Cirrhosis**

- Gynaecoma*stia occurs due to altered sex hormone metabolism, and an increase in the oestradiol; free testosterone ratio.*

***Hypogonadism***

- *Primary hypogonadism causes a compensatory rise in LH, in turn causing increased peripheral aromatization of testosterone to oestradiol.*
- *Secondary hypogonadism, due to pituitary or hypothalamic disease (e.g. prolactin excess, Kallman's syndrome haemachromatosis), may also cause gynaecomastia despite LH deficiency, since the adrenal cortex continues to produce oestrogen precursors, which are converted to oestrogens in peripheral tissues.*

**Tumours**

***Testicular tumours:***

- *Germ cell tumours account for over 95% testicular tumours. Gynaecomatia occurs in 5% of patients, due to hCG secretion*

*stimulating oestradol production by the testes.*

- *Leydig cell tumours cause gynaecomastia in 20 – 30% of cases. These tumours present with precocious puberty in boys, or poot libido and gynaecomastia in young males. Approximately 10% of these tumours are malignant.*
- *Sertoli cell turnours cause gynaecomastia through excess aromatization of androgents to oestrogens. These turnours may occur in Peutz- Jeger 's syndrome.*
- *Adrenocortical turnours may cause gynaecomastia through overproduction of androgens such as androstenedione, which are converted to oestrogens in peripheral tissues.*
- E*ctopic hCG-secreting tumours include lung, gastric, renal, and hepatocellular carcinomas.*
- *Hypogonadism from chemotherapy or radiotherapy may also cause gynaecomastia in patients with testicular tumours.*

**Graves disease**

- *Gynaecomastia may occur due to increased sex hormone-binding globulin (SHBG), and decreased free testosterone levels.*
- *Chronic renal failure:*
- *Half of patients receiving haemodialysis develop gynaecomastia due to decreased leydig cell function. Gynaecomastia may also occur following kidney transplantation due to ciclosporin use.*

***Androgen insensitivity syndrome :***

- Complete androgen insensitivity, .formerly termed 'testicular feminization syndrome', causes a female*phynotype i*n patients who are genotype males. These patients are regarded as female, and therefore present with infertility and amenorrhoea rather gynaecomastia. Partial androgen receptor defects maycause gynaecomastia in phenotyp*ic males.*

***<u>Drugs cause gynaecomastia</u>***

- Anti-androgens
- Cyproterone acetate
- Finasteride/dutasteride
- Gastrointestinal drugs
- Cimetidine / ranitidine
- Cancer chemotherapy
- Alkylating agents/vinca alkaloids (due to testicular damage and

hypogonadism)
- *Imatinib (tyrosine kinase inhibitor used for chronic myeloid leukemia (CML) and gastrointestinal stromal tumour (GIST).*

***Cardiovascular drugs***
- Spironolactone (displaces oestrogen from SHBG, increasing free oestrogen: testosterone ratio)
- Digoxin
- Amiodarone
- Methyl-dopa

***Antimicrobial drugs***
- Isoniazid
- Ketoconazole
- Metronodazole

***Anti-viral drugs***
- Highly active anti-retroviral (HAART) therapy (especially protease inhibitors)

***Neurological drugs***
- Phenothiazines
- Metoclopramide
- Tricyclic anti-depressants
- Opiates

## 1353. Brain tumor causing hypernatremia in children

a) Medulloblastoma

b) Cerebellar astrocytoma

c) Craniophyrangioma

d) Brain stem glioma

Correct Answer - C
Ans. is 'c' i.e., Craniophyrangioma

- Craniophyrangioma leads to central diabetes mellitus and resultant loss of water leads to hypernatremia.

## 1354. Poorly controlled diabetes with blood sugar of 450 mg% is associated with:

a) Hyponatremia

b) Hypernatremia

c) Hypokalemia

d) Hypomagnesemia

Correct Answer - A
Ans. is 'a' i.e., Hyponatremia

- Poorly controlled diabetes draws water out of cells resulting in hyponatremia.

n Plasma concentration falls by 1.4 mmol/L for every 100mg/d1 rise in plasma glucose concentration of sodium.

## 1355. All of the following drugs may be used in the treatment of ulcerative colitis Except

a) Corticosteroids

b) Azathioprine

c) Sulfasalazine

d) Methotrexate

Correct Answer - D
Ans. is 'd' i.e., Methotrexate
**Methotrexate in crohn's disease**

- Methotrexate has been shown to be effective for inducing remission in patients with steroid dependent and steroid refractory crohn's disease.

**Agents that may be used for treatment of ulcerative colitis**

- 5-ASA
- Glucocorticoids
- Azathioprine and 6 mercaptopurine
- Cyclosporine or TNF alpha therapy (Infliximab).
- *Tacrolimus is a macrolide antibody that has shown to be effective in adults with steroid dependent or refractory ulcerative colitis.*

**Drugs used in crohn's disease**

- Cyclosporine or infliximab
- 6-Mercaptopurine or azathioprine
- Glucocorticoid IV
- Glucocorticoid oral
- Glucocorticoid rectal
- 5-ASA rectal or oral

## 1356. Treatment of choice in acute sarcoidosis is

a) Prednisolone

b) Cyclosporin

c) Infliximab

d) IV immunoglobulins

Correct Answer - A
Ans. is 'a' i.e., Prednisolone

- Prednisolone (corticosteroid) is the treatment of choice for both acute and chronic phase of sarcoidosis that requires treatment.

## 1357. The following are the complication of haemodialysis except -

a) Hypotension

b) Peritonitis

c) Hypertension

d) bleeding tendency

Correct Answer - B

Ans. is 'b' i.e., Peritonitis

- *P*atients with endstage renal disease (ESRD) on long term dialysis therapy have very high mortality due to predominantly cardiovascular causes.
- 'Sudden cardiac death is the single most common form of death in hemodialysis, accounting for 20% to 30 all deaths in this cohort.'
- Dialysis patients have extraordinarity high mortailty rates with cardic disease accounting for 43 percent deaths
- in this population. Data indicates that approximately 27% of the mortailties are due to sudden cardic death.

**More on cardiovascular complications in dialysis**

- *Cardiovasucular disease is the major cause of death in ESRD patients and atheroscleroses is present in all long term dialysis patients.*
- *Premature cardiac death has reached epidemic levels in world dialysis population occurring five to ten times as commonly as in age matched general population and accounting for at least half of all patients death.* o *Hypertension is a major risk factor*
- *Other risk factor are :-*
- *Hyperphosphetemia and elevated calcium phosphorus with calcium deposition in coronary arteries.*

**Anemia**
**Hypertriglyceridem**ia

- Low HDL cholesterol
- Increased lipoprotein (a)
- Insulin deficiency or resistance
- Hyperhomocysteinem

**Also know**

**Complications of dialysis**

| **Acute complications of hemodialysis** | **Long term complications** |
|---|---|
| *o Hypotension* | *o Cardiovascular* |
| *o Cramps* | *o Anemia* |
| *Nausea and vomiting* | *Secondary hyperparathyrodism and* |
| *Headache o* | *Malnutrition* |
| *Chest pain o* | *o Hepatitis (A, B, C, D, E* |
| *Back pain* | *Depression* |
| *Itching* | *o Dialysis encephalopathy* |
| *Fever and chills* | *Malignant tumours* |
| | *Carpal tunnel syndrome* |
| | *Uremic neurophty* |

## 1358. Most common acute complication of dialysis is

a) Hypotension

b) Bleeding

c) Dementia

d) Muscle cramps

Correct Answer - A
Ans. is 'a' i.e., Hypotension

- Hypotension is the most common acute complication of hemodialysis particularly among patients with diabetes mellitus.
- Factors involved are :-
- *Excessive ultrafiltration, with inadequate compensatory vascular filling, impaired vasoactive or autonomic response, osmolar shifts, overzealous use of antihypertensives*

## 1359. The most likely diagnosis in the case of a patient with multiple pulmonary cavities, hematuria and red cell casts is

a) Anti-GBM disease

b) Churg-Strauss

c) Systemic lupus erythematousus

d) Wegner's granulomatosis

Correct Answer - D

Ans. is 'd' i.e., Wegner's granulomatosis

- Multi lung cavities and hematuria are characteristic of Wegner's granulomatosis.
- Anti-GBM disease (Goodpasture's syndrome) usually does not cause lung cavities.
- Churg-strauss syndrome usually does not cause hematuria.
- SLE is not a usual cause of lung cavities.

## 1360. Hung-up reflexes are seen in

a) Chorea

b) Atheotosis

c) Cerebral palsy

d) Cerebellar palsy

Correct Answer - A
Ans. is 'a' i.e., Chorea
**Hung up knee jerk**

- When patellor tendon is tapped while the foot is hanging free, the leg may be held in extension for few seconds before relaxing owing to prolonged contraction of quadriceps.
- This is seen in "chorea".

**Other neurological signs associated with chorea**

- Milkmaids grip
- Piano sign
- Handwriting

**Milkmaid's grip**

- Inability to maintain sustained voluntary contraction of muscle group at a constant level.
- Inability to apply steady pressure during handshake leading to a characteristic squeeze and release of grip.
- Patient's have difficulty maintaining sustained eyelid closure and sustained tongue protrusion

## 1361. Arsenic poisoning causes

a) Polyneuritis

b) Mononeuritis multiplex

c) Radiculopathy

d) Myelopathy

Correct Answer - A
Ans. is 'a' i.e., Polyneuritis

- There is sensory and motor (i.e. mixed) polyneuropathy, with painful paresthesia of hands and feet and muscle tenderness.

## 1362. Tropical pulmonary eosinophilia is caused because of

a) Occult filariasis

b) Cerebral melaria

c) Penumonic plague

d) Asthmatic bronchitis

Correct Answer - A
Ans. is 'a' i.e., Occult filariasis

- Occult filariasis is a rare condition which is caused by hypersensitivity reaction to filarial antigen.
- Micro filatia are absent in the blood.
- Lymphatic filariasis is absent.
- Indirect evidence of filarial infection is obtained by demonstrating antifilarial antibodies

# 1363. All the following are features of Tropical pulmonary Eosinophilia except-

a) Eosinophilia > 3000/mm3

b) Microfilaria in blood

c) Paroxysmal cough and wheeze

d) Bilateral chest mottling and increased bronchovascular markings

Correct Answer - B

**Answer *is* B (Microfilaria in blood) :**

*In TPE, Microfilaria are rapidly cleared from the blood stream by the lungs.*

*Thus, microfilariae are sequestrated in the lungs and are not found in the blood.*

**Tropical Pulmonary Eosinophilia**

*Tropical Pulmonary Eosinophilia (TPE) is a distinct syndrome that develops in individuals infected with Lymphatic filarial species.*

Clinical symptoms result from allergic and inflammatory reaction elicited by the cleared parasites.

**Features of Tropical Pulmonary eosinophilia (TPE) :**

- Male more commonly affected than females (4: 1)
- History of resistance in filarial endemic region
- *Paroxysmal cough and wheezing that are usually nocturnal*
- Weight loss, low grade fever, adenopathy
- *Eosinophilia > 3000 eosinophilia / ,uLe*
- *Chest X-Ray : increased bronchovascular markings , diffuse miliary lesions ,* or *mottled opacities.*
- *Restrictive changes on Pulmonary function test* 2
- *Elevated levels of IgE* $^{e}$ *&* Antifilarial antibody titers.

*In TPE, Microfilaria are rapidly cleared from the blood stream by the lungs.*
*Thus, microfilariae are sequestrated in the lungs and are not found in the blood.*

## 1364. In anklyosing spondylitis joint involvement is least in?

a) Wrist and hand

b) Sacroiliac joint

c) Acromio-clavicular joint

d) Costochondral junction

Correct Answer - A

Ans. is 'a' i.e., Wrist and hand

**Ankylosing spondylitis (marie - strumpell disease)**

- Ankylosing spondylitis is a chronic progressive inflammatory disease of the sacroiliac joints and the axial skeleton.
- Prototype of seronegative (absence of rheumatoid factor) spondyloarthropathies.
- Inflammatory disorder of unknown cause.
- *Usually begins in the second or third decade with a median age of 23, in 5% symptoms begin after 40.*
- *Male to female ratio is 2-3 : 1*
- Strong correlation with HLA-B27
- 90-95% of cases are positive for HLA - B27.

**Joints involved *in* ankylosing spondylitis**

- Primarily affects axial skeleton.
- The disease usually begins in the sacro-iliac joints and usually extends upwards to involve the lumbar, thoracic, and often cervical spine
- *In the worst cases the hips or shoulders are also affected. o Hip joint is the most commonly affected peripheral joint. o Rarely knee and ankle are also involved.*

**Pathology**

- ***Enthesitis i.e.*** *inflammation of the insertion points of tendons, ligaments or joint capsule on bone is one of the hallmarks of this entity of disease.*
- Primarily affects axial (spinal) skeleton and sacroiliitis is often the earliest manifestation of A.S..
- Involvement of costovertebral joints frequently occur, leading to diminished chest expansion (normal 5 cm)
- Peripheral joints e.g. shoulders, and hips are also involved in 1/3rd patients.
- *Extraarticular manifestations like acute anterior uveitis (in 5%); rarely aortic valve disease, carditis and pulmonary fibrosis also occur.*

**Pathological changes proceed in three stages?**

- Inflammation with granulation tissue formation and erosion of adjacent bone.
- Fibrosis of granulation tissue
- Ossification of the fibrous tissue, leading to ankylosis of the joint.
- Inflammatory bowel disease (CD, UC) may also be seen.

**Clinicalfeatures (symptoms)**

- Low back pain of insidious onset
- Duration usually less than 3 months
- *Significant morning stiffness and improvement with exercise*
- *Limited chest expansion*
- Diffuse tenderness over the spine and sacroiliac joints
- Loss of lumbar lordosis, increased thoracic kyphosis
- Decreased spinal movements (especially extension) in all directions.

**Radiological features of an kvlasing spondylitis**

- Radiographic evidence of sacroiliac joint is the most consistent finding in ankylosing spondylitis and is crucial for diagnosis.
- The findings are :-
- D Sclerosis of the articulating surfaces of SI joints
- Widening of the sacroiliac joint space
- Bony ankylosis of the sacroiliac joints
- Calcification of the sacroiliac ligament and sacro-tuberous ligaments
- *Evidence of enthesopathy - calcification at the attachment of the muscles, tendons and ligaments, particularly around the pelvis and around the heel.*

**X-ray of lumbar spine may show :-**

- *Li Squaring of ve*rtebrae : The normal anterior concavity of the vertebral body is lost because of calcification of the anterior longitudinal ligament.
- Loss of the lumbar lordosis.
- Bridging 'osteophytes' (syndesmophytes)
- Bamboo spine appearance
- **In** the early disease process, plain x-rays may be read as normal.
- More accurate and early diagnosis can be done by using MR1 and/or CT scan.
- *Dynamic MRI with fat saturation, either short tau inversion recovery (STIR) sequnece or TI weighted images with contrast enhancement is highly sensitive and specific for identifying early intra-articular inflammation, cartilage changes, and underlying bone marrow edema in sacroilitis.*
- *Magnetic resonance imaging allows for visualization of acute sacroilitis, spondylitis, and spondylodiscitis, and can also detect acute inflammation of the entheses, bone and synovium. The ability to detect early inflammatiion and acurately visualize cartilaginous and enthesal lesions makes magnetic resonance imaging a useful assessment tool in the spondyloarthropathies.*

## 1365. Least common site involved in osteoarthritis is

a) Hip joint

b) Knee joint

c) Carpometacarpal joint of thumb

d) Distal carpophalangeal joint

Correct Answer - C
Ans. is 'C'
**In the hand the joints specifically involved are ?**

- Distal interphalangeal join& (of particular importance is the point that this joint is not involved in rheumatoid arthritis).
- Proximal interphalangeal join&
- First carpometacarpal jointsQ

**Remember these two important features of joint involvement in osteoarthritis**

- It does not involve the metacarpophalangeal jointso
- It does not involve the wrist joINTEGER(2. It also does not involve the carpometacarpalQ joint (except at the base of thumb).
- Osteoarthritis involves the carpometacarpal joint at the base of thumb, infact it is the second most common area of involvement in osteoarthritis.

**Other joints which are commonly involved in osteoarthritis are**

- Hips,
- Knees,
- Lower lumbar
- *Cervical.*

**Joints which are usually spared in osteoarthritis are**

- Wrists[Q], carpometacarpale
- ElbowsQ
- Shoulder joint

## 1366. 65-year-old man presents with anemia, posterior columan dysfunction, and planter extensor. Which of the following is the likely cause

a) Tabes dorsalis

b) Frederich's ataxia

c) Vitamin B1 deficiency

d) Vitamin B 12 deficiency

Correct Answer - D
Ans. is 'd' i.e., Vitamin B12 deficiency

- Anemia along with involvement of posterior column is characteristic of *subacute combined degeneration of spinal cord* caused by vitamin B12 deficiency.

## 1367. Which is not true of Tabes dorsalis?

a) Seen in neuro syphilis

b) Paresthesia is seen

c) Deep tendon reflexes are retained

d) Abdominal pain and visceral symptoms occur

Correct Answer - C
Deep tendon reflexes are retained REF: Harrison's Principles of Internal Medicine 17th ed chapter 372
TABES DORSALIS:

- The classic syndromes of tabes dorsalis and meningovascular syphilis of the spinal cord are now less frequent than in the past but must be considered in the differential diagnosis of spinal cord disorders.
- The characteristic symptoms of tabes are fleeting and repetitive lancinating pains, primarily in the legs or less often in the back, thorax, abdomen, arms, and face. Ataxia of the legs and gait due to loss of position sense occurs in half of patients.
- Paresthesias, bladder disturbances, and acute abdominal pain with vomiting (visceral crisis) occur in 15-30% of patients.
- The cardinal signs of tabes are loss of reflexes in the legs; impaired position and vibratory sense; Romberg's sign; and, in almost all cases, bilateral Argyll Robertson pupils, which fail to constrict to light but accommodate. Diabetic polyradiculopathy may simulate tabes.

## 1368. Maximum loss of sodium in a child occurs in

a) Gastric juice

b) Ileal fluid

c) Non cholera Diarrhoea

d) Cholera

Correct Answer - B
Ans. is 'b' i.e., heal fluid

**Cations and anions in biological fluids in meq/dl**

| Fluid | Sodium | Potassium | Chloride |
|---|---|---|---|
| Gastric juice | 60 | 10 | 85 |
| heal fluid | 130 | 10 | 115 |
| Diarrhea stool | 10-90 | 10-80 | 10-110 |

## 1369. All of the following statements about genetics of G6PD deficiency are true, except

a) X-linked inheritance

b) More severe in Men

c) Contradicts Lyon Hypothesis

d) May affect Heterozygous females

Correct Answer - C

Ans. is 'c' i.e., Contradicts Lyon Hypothesis

**Genetics of G6PD**

- The gene for G6PD is located on the X chromosome (band X q28) [8] and has been cloned and sequenced. o Even though females have two X chromosomes per cell, normal males and females have the same enzyme activity
- in their red cells because one of the X chromosomes in each cell of the female embryo is inactivated and remains
- inactive throughout subsequent cell divisions (Lyon hypothesis).
- G6PD deficiency is expressed in males carrying a variant gene, while heterozygous females are usually clinically normal.
- However, the mean red blood cell enzyme activity in heterozygous females may be normal, moderately reduced, or grossly deficient depending upon the degree of lyonization and the degree to which the abnormal G6PD variant is expressed.
- **G6PD** supports Lyon's hypothesis :-
- According to lyon's hypothesis one of the two chromosome in each cell of the female embryo is inactivated and remains inactive throughout subsequent cell division.

- G6PD is inherited as an X-linked (recessive) disorder, it is more common in males.
- Heterozygous Female may also be affected depend on the extent of lyonisation (inactivation of one X-chromosome) but the overall average degrees of hemolysis in heterozygous female is less.
- A heterozygous female with 50 percent normal G6PD activity has 50 percent normal red cells and 50 percent G6PD-deficient red cells.
- The deficient cells are as vulnerable to hemolysis as the enzyme-deficient red blood cells in males.

**Male**

- Males, who have only one copy of the X chromosome, are either normal or hemizygous for the variant glucose 6-phosphate dehydrogenase (G6PD) gene.
- *Thus, G6PD deficiency is expressed in males carrying a variant gene on their X chromosome that produces sufficient enzyme deficiency to lead to symptoms. All of the red cells in affected males are vulnerable to hemolysis.*

**Female**

- Females, who have two copies of the X chromosome, are either normal, heterozygous, or homozygous for the variant gene.
- *Heterozygous females are usually clinically normal.*
- *However, their mean red blood cell enzyme activity may be normal, moderately reduced, or grossly deficient depending upon the degree of X chromosome inactivation (lyonization) and the degree to which the abnormal G6PD variant is expressed.*
- *A female with 50 percent normal G6PD activity, due to inactivation of one X chromosome in each cell via lyonization, has 50 percent normal red cells and 50 percent G6PD-deficient red cells.*
- *The deficient cells are as vulnerable to hemolysis as the enzyme-deficient red blood cells in males.*
- *Homozygous females are as severely affected clinically as hemizygous males. All of their red cells are vulnerable to hemolysis*

## 1370. With regards to G6PD deficiency, which of the following in false

a) Affects the pentose phosphate pathway

b) Associated with neonatal jaundice

c) Acute haemolysis can be precipitated by broad beans

d) X-linked recessive disorder that does not affect heterozygous famales

Correct Answer - D

Ans. is 'd' i.e., X-linked recessive disorder that does not affect heterozygous famales

- *G*lucose 6-phosphate dehydrogenase (G6PD) deficiency, an X-linked disorder, is the most common enzymatic disorder of red blood cells in humans, affecting 400 million people worldwide.

**Clinical spectrum**

- *T*he clinical expressio*n* of G6PD variants encompasses a spectrum of hemolytic syndromes

**The four forms of symptomatic G6PD deficiency :**

- Acute hemolytic anemia
- Favism
- Congenital nonspherocytic hemolytic anemia
- Neonatal hyperbilirubinemia
- *G6PD deficiency is expressed in males carrying a variant gene that results in sufficient enzyme deficiency to lead to symptoms.*

**Acute hemolytic anemia**

- *Al*most all individuals with the most prevalent G6PD variants, G6PD A- and G6PD Mediterranean, are asymptomatic in the steady state.
- They have neither anemia, evidence of increased red cell destruction, nor an alteration in blood morphology,. o However

sudden destruction of enzyme deficient erythrocytes can be triggered by certain drugs or chemicals, by selected infections, and rarely by metabolic abnormali*ties (eg, diabetic ketoacidosis).*

**Clinical course**

- At two to four days after drug ingestion, there is the sudden onset of jaundice, pallor, and dark urine, with or without abdominal and back pain.
- This is associated with an abrupt fall in the hemoglobin concentration of 3 to 4 g/dL, during which time the
- peripheral blood smear reveals red cell fragments, microspherocytes, and eccentrocytes or "bite" cells.
- The anemia induces an appropriate stimulation of erythropoiesis, characterized by an increase in reticulocytes that is apparent within five days and is maximal at 7 to 10 days after the onset of hemolysis.
- Even with continued drug exposure, the acute hemolytic process ends after about one week, with ultimate reversal of the anemia.

**Inciting events**

- *P*atients with class II or III variants develop intermittent hemolysis only after one or more of the following inciting events.
- Infection
- Oxidant drugs
- Chemical agents (eg, moth balls, aniline dyes, henna compounds)
- Diabetic ketoacidosis
- Ingestion of fava beans

**Drugs and chemicals**

- Primaquine, dapsone, and a number of other drugs can precipitate hemolysis in G6PD deficient subjects.

**Foods: fava beans and bitter melon**

- G6PD deficiency can also be precipitated by the the ingestion of fresh fava beans (favism).
- Manifestation offavism begins 5-24 hrs after fava bean ingestion and include headache, nausea, back pain.

**Congenital nonspherocytic hemolytic anemia**

- Patients with class I G6PD variants have such severe G6PD deficiency that lifelong hemolysis occurs in the absence of infection or drug exposure.

- *Such patients fall under the category of having congenital nonspheroc$^{y}$tic hemolytic anemia.*
- These G6PD variants have low in vitro activity and/or marked instability of the molecule, and most have DNA mutations at the glucose-6-phosphate or NADP binding sites.
- *These sites are central to the function of G6PD, which oxidizes glucose-6-phosphate and reduces NADP to NADPH. It is presumed that the functional defect is so severe that the red cells cannot withstand even the normal oxidative stresses encountered in the circulation.*
- Anemia and jaundice are often first noted in the newborn period, and the degree of hyperbilirubinemia is frequently of sufficient severity to require exchange transfusion.
- *After infancy, hemolytic manifestations are subtle and inconstant. Most individuals have mild to moderate anemia (hemoglobin 8 to 10 g/dL) with a reticulocyte count of 10 to 15 percent. Pallor is uncommon, scleral icterus is intermittent, splenomegaly is rare, and splenectomy generally is of little benefit.*
- Hemolysis can be exaggerated by exposure to drugs or chemicals with oxidant potential or exposure to fava beans.
- Some drugs with relatively mild oxidant potential that are safe in patients with class II or class III G6PD variants may increase hemolysis in patients with class I variants.

**Neonatal hyperbilirubineinia**

- *T*he clinical picture of neonatal jaundice due to G6PD deficiency differs from neonatal jaundice seen in hemolytic disease of the fetus and newborn (HDFN) associated with Rh(D) incompatibility in two main respects.
- G6PD deficiency-related neonatal jaundice is rarely present at birth; the peak incidence of clinical onset is between days two and three.
- a There is more jaundice than anemia, and the anemia is rarely severe. The severity ofjaundice varies widely, from being subclinical to imposing the threat of kernicterus if not treated

## 1371. Platelets in stored blood do not live after

a) 24 hours

b) 48 hours

c) 72 hours

d) 96 hours

Correct Answer - C
Ans. is 'c' i.e., 72 hours

- Platelets are provided as a pooled preparation from one or several donors, usually as a 6-unit bag, which is the
- usual amount given to an average-sized adult.
- Each unit contains approximately 8 x $10^{1°}$ platelets and should increase the platelet count by about 7000-10,000/ pL in a 75kg adult.
- Platelets stored at room temperature can be used for up to 5 days and have a life span of 8 days.
- *Those stored at 4°C are useful for only 24 hours (only 50-70% of total platelet activity is present at 6 hours) and have a life span of only 2-3 days.*
- ABO compatibility should be observed for platelets, but is not essential. For each donor used, there is a similar risk of transmitting hepatitis and HIV as for one unit of blood.
- Platelet should be administered through a 170pm filter.

## 1372. Schober's sign is for :

a) Flexion of lumbar spine

b) Chest expansion

c) Pain with motion of hip

d) Neck pain and stiffness

Correct Answer - A
**A i.e. Flexion of lumber spine**
**Schober's test** is measure of *flexion on lumber spineQ.* This test is done in *ankylosing spondylitisQ*

## 1373. Earliest and often the only presentation of TB kidney is

a) Increased frequency

b) Colicky pain

c) Hematuria

d) Renal calculi

Correct Answer - A
Ans. is 'a' i.e., Increased frequency

- *Urinary frequency, dysuria, nocturia, hematuria, and flank or abdominal pain is common presentations.*
- *However, patients may be asymptomatic and the disease is* discovered only after severe destructive lesions of the kidneys have developed.
- Urinalysis gives abnormal results in 90% of cases, revealing pyuria and hematuria.
- The documentation of culture-negative pyuria in acidic urine raises the suspicion of TB.
- IV pyelography, abdominal CT, or MRI may show deformities and obstruction, and calcifications and ureteral strictures are suggestive findings.
- Culture of three morning urine specimens yields a definitive diagnosis in nearly 90% of cases.

## 1374. Most common cause of diarrhea in AIDS patients?

a) Salmonella typhimurium

b) Cryptosporidium

c) Candida

d) isophora

Correct Answer - B
Ans. is 'b' i.e., Cryptosporidium
Most common cause of diarrhea in HIV → Cryptosporidium.
**<u>Diseases of Oropharvnx and GI system in H.I.V.</u>**

- These are :?
- *Oral lesions : Thrush (oral candidiasis), oral Hairy leukoplakia (caused by EBV), and aphthous ulcer. Esophageal : Esophagitis by CMV, HSV or candida.*
- *Diarrhea : Diarrhea is caused by :-*
- *Bacteria : Salmonella, Shigella, Campylobacter, and mycobacteria avium intracellulare.*
- *Fungal : Histoplasma, Coccidioides, penicillium.*
- *Other :* CMV, *microsporidia, isospora helli,* and *cryptosporidia.*
- AIDS enteropathy (HIV enteropathy)

## 1375. Not seen with uremic lung

a) alveolar injury

b) Pulmonary edema

c) Interstitial fibrosis

d) Fibrinous exudate in alveoli

Correct Answer - C
Ans. is 'c' i.e., Interstitial fibrosis
**Uremic lung is referred to abnormalities expressed chest x-ray abnormalities seen in patients with CKD.**

- The pathogenesis was believed to be related to blood urea nitrogen and creatinine retention.
- There is :
- Its pathophysiology is based on uremia-induced increased permeability of pulmonary alveolo-capillary interfaces, leading to
- Interstitial and intra-alveolar edema
- Atelectasis
- *Alveolar hemorrhage*
- *Pulmonary hyaline membrane formation.*
- *These changes are compounded by bleeding diathesis secondary to platelet dysfunction in advanced renal disease.*
- The pulmonary symptoms and radiographic findings are reversible with hemodialysis.

## 1376. Oliguric phase of ARF is characterized by A/E

a) Chest pain

b) Acidosis

c) Hypertension

d) Hypokalemia

Correct Answer - D
Ans. is 'd' i.e., Hypokalemia

Maintenance phase (Oliguric phase) (Lasts for 1-2 weeks) Uremic complications and electrolyte abnormalities arise during this phase-
• GFR reaches its lowest point, urine output is lowest (typically 5-10 ml/min)
• Due to fluid overload and decreased electrolyte excretion, following electrolyte abnormalities are seen
• Hyperkalemia - (d/t reduced excretion)
. Hyponatremia -s (d/t volume overload)
. Hyperphosphatemia 4 (d/t reduced excretion)
. Hypermagnesemia - (d/t reduced excretion)
. Hyperuricemia -> (d/t reduced excretion)
. Hypocalcemia -> (d/t deposition of calcium phosphate)
. Elevation of B. U.N. 4 (d/t reduced excretion)
. Hyposmolality -> (d/t volume overload)
. Anemia 4 (d/t Impaired erythropoiesis Hemolysis, bleeding Dilution)

## 1377. In EEG type of wave seen in metabolic encephalophathy

a) Alpha

b) Beta

c) Gamma

d) Delta

Correct Answer - D
Ans. is 'cl' i.e., Delta
**E.E.G. changes in metabolic encephalopathy**
**In metabolic encephalopathy changes are typically nonfocal**

- E.E.G. has been widely used to evaluate metabolic encephalopathy.
- The E.E.G findings are abnormal in acute encephalopathic stages.
- It is difficult to establish a diagnosis of metabolic encephalopathy with certainity through E.E.G.
- There is generalized slowing of the E.E.G with an excess of the delta and theta waves with suppression of normal alpha and beta wave activity and occasionally bilateral spikes and waves complexes occurring in absence of seizure activity".
- In metabolic encephalopathies, the E.E.G evolution correlates well with the severity of encephalopathy. **o** However EEG has little specificity in differentiating etiologies in metabolic encephalopathy.
- For example, though triphasic waves are most frequently mentioned in hepatic encephalopathy, they can also be seen in uremic encephalopathy or even in aged psychiatric patients treated with lithium. o Spikes and waves may appear in hypo or hyperglycemia uremic encephalopathy or vitamin deficiencies.

**Common principles of EEG changes in metabolic**

**encephalopathy are : -**

- Varied degrees of slowing
- Associated mixtures of epileptic discharge
- High incidence of triphasic waves
- Reversibility after treatment of underlying causes

| **Metabolic encephalopathy** | **EEG rythm** |
|---|---|
| Grade I (almost normal) | Dominant activity is alpha rhythm with minimal teta activity |
| Grade II (mildly abnormal) | Dominant teta background with some alpha and delta activities. |
| Grade II (moderately abnormal) | Continuous delta activity predominates, little activity of faster frequencies |
| Grade IV (severely abnormal) | Low-amplitude delta activity or suppression-burst pattern |
| Grade V (extremely abnormal) | Nearly"flat" tracing or electrocerebral inactivity. |

## 1378. Alveolar hypoventilation is present in A/E:

a) Bulber poliomyelitis

b) COPD

c) Kyphoscoliosis

d) Lobar pneumonia

Correct Answer - D

**D** i.e Lobar Pneumonia

- The important causes of hypoventilation :-

*i)* Obstruction in airways :- *Foreign body,* COPD *(chronic bronchitis, emphysema).*

*ii) Decrease in respiratory drive :-* It is due to decrease in stimulation of respiration from CNS e.g. brain injury, meningitis, bulbar poliomyelitis, Drugs (morphine, sedative, anesthetics), hypothyroidism.

*iii) Decrease in functioning of respiratory muscles :-* Mysthenia gravis, poliomyelitis, kyphoscoliosis, myopathy, polymyositis, GB syndrome, interstitial lung disorders, AML.

*iv) Increased load on respiratory system :-* It may be due to :?

*a) Reduced chest wall compliance :-* Pleural effusion, pneumothorax, ascitis, rib cage disorder (kyphoscoliosis), ankylosing spondylitis.

*b) Reduced lung compliance :-* Atelectasis, lung resection, alveolar edema, PEEP.

## 1379. Asbestosis causes all except

a) Shaggy heart borders

b) Honeycombing

c) Hilar lymphadenopathy

d) Basal peribronchial fibrosis

Correct Answer - C
Ans. is 'c' i.e., Hilar lymphadenopathy

- *Asb*estosis causes fibrosis in the lower lobes of the lung.
- Pleural plaque formed by asbestosis most commonly affects anterolateral and posterolateral aspects of parietal pleura and over the dome of diaphragm

## 1380. The most common cause of sudden death in sarcoidosis is

a) Pneumonia

b) Cor pulmonale

c) Arrythmias

d) Liver failure

Correct Answer - C
Ans. is 'c' i.e., Arrhythmias

- *Cardiac involvement occurs initially with inflammation and granuloma formation followed by scarring. The initial inflammation can lead to triggered ventricular arrhythmias with subsequent scarring resulting in the substrate for reentrant monomorphic ventricular tachycardia.*

## 1381. Most common cause of unilateral Hilar lymphadenopathy

a) Histoplasmosis

b) Sarcoidosis

c) Aspergillosis

d) Tuberculosis

Correct Answer - D
Ans. is 'd' i.e., Tuberculosis

- Primary TB most commonly presents with focal alveolar pneumonia and associated unilateral hilar or mediastinal adenopathy.

## 1382. Most common cause of embolic stroke is?

a) Intra-Cardiac Thrombi

b) Particulate Matter From IV Drug Injections

c) Protein C deficiency

d) Antiphospholipid syndrome

Correct Answer - A
Answer *is* A (Intracardiac Thrombi):
*The most common cause of embolic strokes are Intro-cardiac Thrombi.*
*The most common sources of systemic embolism and embolic stroke are Intra-cardiac thrombi formed as a result of atrial fibrillation, ST- elevation MI, left ventricular dysfunction or heart failure.*
*Atrial Fibrillation is the single most important predisposing factor (Atrial Thrombus) followed by Myocardial Infarction (Left Ventricular Thrombus).*

## 1383. Most common site for berry aneurysm rupture

a) Anterior circulation of brai

b) Posterior circulation of brain

c) Ascending aorta

d) Descending aorta

Correct Answer - A
Ans. is 'a' i.e., Anterior circulation of brain
**T<u>he most common sites in descending order of frequency are -</u>**

- *Li Pro*ximal portion of anterior communicating artery (at the junction of anterior communicating artery with cerebral artery)
- At the origin of the posterior communicating artery from the stem of the internal carotid artery.
- At the first major bifurcation of middle cerebral artery.
- At the bifurcation of internal carotid into middle and anterior cerebral arteries.
- Vertibrobasilar bifurcation (3%)

## 1384. Obesity is seen in all except

a) Cushing syndrome

b) Pickwinian syndrome

c) Prader willi syndrome

d) Sipple syndrome

Correct Answer - D
Ans. is `d' i.e., Sipple syndrome
**Important syndromes associated with obesity**

- Albright hereditary osteodystrophy (pseudohypoparathyroidism type la)
- Alstrom syndrome
- Bardet-Biedl syndrome
- Beckwith-Wiedemann syndrome
- Carpenter syndrome

Cohen syndrome • *Prader-willi syndrome*

## 1385. Cause of death in diabetic ketoacidosis in children

a) Cerebral edema

b) Hypokalemia

c) Infection

d) Acidosis

Correct Answer - A
Ans. is 'a' i.e., Cerebral edema

- High blood sugar will cross the blood-brain barrier and simultaneously will draw water inside leading to cerebral edema. Cerebral edema accounts for 60-90% of all DKA related deaths in children.
- Infection is a precipitator for the development of DKA.
- Other precipitating factors can be tissue ischemia, inadequate insulin administration, drugs (cocaine) and pregnancy.

## 1386. Acute hyponatremia becomes symptomatic at

a) < 135 mEq

b) < 125 mEq

c) < 120 mEq

d) < 110 mEq

Correct Answer - B
Ans. is 'b' i.e., < 125 mEq
**Serum level of sodium at which symptoms develop**
Acute < 125 meq/L
Chronic < 120 meq/L

- Hyponatremia is commonly defined as a serum sodium < 135 mmol/L (< 135 mEq/L). Neurological symptoms
- occur at different levels of low sodium, depending not only on the absolute value but also on the rate of fall.
- In patients with hyponatremia that develops over hours, life-threatening seizures and cerebral edema may occur
- at values as high as 125 mmol/L.
- In contrast, some patients with more chronic hyponatremia that has slowly developed over months to years may be asymptomatic even with serum levels < 110 mmol.

**Acute or hyperacute hyponatremia**

- The hyponatremia developed within the previous 24 hours, it is called "acute."
- If the hyponatremia developed over just a few hours due to a marked increase in water intake (self-induced water intoxication, as may be seen in marathon runners, psychotic patients, and users of ecstasy), it is called "hyperacute."

**Chronic hyponatremia**

- If it is known that the hyponatremia has been presentfbr more than 48 hours, or if the duration is unknown (such as in patients who develop hyponatremia at home), it is called "chronic."

**Mild to moderate hyponatremia**

- Mild hyponatremia is usually defined as a serum sodium concentration between 130 and 135 meq/L.
- Moderate hyponatremia is often defined as a serum sodium concentration between 121 and 129 meq/L.

**Severe hvponatremia**

- Severe hyponatremia can be defined as a serum sodium of 120 meq/L or less.

**Symptoms of hvponatremia**

**Absent symptoms**

- Patients with hyponatremia are frequently asymptomatic, particularly if the hyponatremia is chronic and of mild or moderate severity (ie, serum sodium >120 meq/L).
- However, such patients may have subclinical impairments in mentation and gait.

**Mild to moderate symptoms**

- Mild to moderate symptoms of hyponatremia are relatively nonspecific and include headache, nausea, vomiting, fatigue, gait disturbances, and confusion.
- In patients with chronic hyponatremia (ie, >48 hours duration), these findings are not associated with impending herniation; however, in patients with more acute hyponatremia, such symptoms should be considered ominous and may evolve without warning to seizures, respiratory arrest, and herniation.

**Severe symptoms**

- Severe symptoms of hyponatremia include
- u Seizures
- Obtundation
- Coma
- Respiratory arrest.

## 1387. What is the Neutrophil count for moderate neutropenia

a) < 500/mm'

b) 500-1000/mm'

c) > 1000/$mm^3$

d) 100/mm3

Correct Answer - B
Ans. is 'b' i.e., 500-1000mm'
Mild neutropenia → Is present when the ANC is 1000-15000 cells/µL
Moderate neutropenia → Is present with an ANC of 500-1000/4

- *Se*vere neutropenia ANC lower than 500 cells/pL.
- The risk of bacterial infection is related to both the severity and duration of the neutropenia.

## 1388. Keratoderma Blenorrhagica is typically seen in

a) Rheumatoid Arthritis

b) Psoriatic Arthritis

c) Reactive Arthritis

d) Ankylosing spondylitis

Correct Answer - C
Answer is C (Reactive Arthritis):
*Keratoderma Blenorrhagica is the charachteristic skin lesion seen in patients with Reactive Arthritis.*
*'The charachteristic skin lesions in Reactive Arthritis, Keratoderma Blenorrha2ica, consist of vesicles that become hyperkeratotic, ultimately forming a crust before disappearing. In patients with HIV infection, these lesions are often extremely severe and extensive sometimes dominating the clinical picture '-*

## 1389. Keratoderma-Blenorrhagicum is pathogno-monic of

a) Behcet's disease

b) Reiter's disease

c) Lyme's disease

d) Glucagonoma

Correct Answer - B
Ans. is 'b' i.e., Reiter's disease
***Keratoderma Blenorrhagica is the characteristic skin lesion seen in patients with Reactive Arthritis.***

- "The Characteristic skin lesions in Reactive Arthritis, Keratoderma Blenorrhagica, consist of vesicles that become hyperkeratotic, ultimately forming a crust before disappearing. These are seen in palms and soles.

## 1390. Gout can be precipitated by all of the following

a) Thiazides

b) Furosemide

c) Cyclosporine

d) High dose salicylates

Correct Answer - D
Ans. is 'd' i.e., High dose salicylates
**High dose Salicylates are uricosuric and do not cause Hyperuricemia.**

- Diuretics including Thiazides and Furosemide are known to cause Hyperuricemia. Cyclosporine and Tacrolimus are also associated with Hyperuricemia.
- High Doses of Salicylates > 3.0 g/day are uricosuric, while Low doses (0.3 to 3.0 g/day) are associated with uric acid retention and Hyperuricemia.

**Also know**
**<u>Causes of drug or diet induced hyperuricemia.</u>**

- Diuretics (thiazides and loop diuretics)
- Cyclosporine and tacrolimus.
- Low dose salicylates.
- Ethambutol.
- Pyrazinamide.
- Ethanol.
- Levodopa.
- Methoxyflurane.
- Laxative abuse (alkalosis).
- Salt restriction.

## 1391. Relative risk of developing TB in patients already infected with TB bacilus is highest in

a) Diabetes

b) Recent infection

c) Post transplantation

d) Malnutrition

Correct Answer - C
Ans. is 'c' i.e., Post transplantation
**Relative risk of developing T.B.**

| | |
|---|---|
| Post transplantation | 20-70 |
| HIV | 30 |
| Silicosis | 30 |
| Recent infection | 12 |
| Diabetes | 3-4 |
| Malnutrition | 2-3 |

## 1392. I.R.I.S. is

a) Immune reconstitution idiopathic syndrome

b) Immune reconstitution immunological syndrome

c) Immune reconstitution inflammatory syndrome

d) Inflammatory reconstitution immune syndrome

Correct Answer - C
Ans. is 'c' i.e., Immune reconstitution inflammatory syndrome

**Causes of bone marrow suppression in patients with HIV infection**

| | |
|---|---|
| HIV infection | Medications |
| Mycobacterial infections | Zidovudine |
| Fungal infections | Dapsone |
| B 19 parvovirus infection | Trimethoprim/Sulfamethoxazole |
| | Pyrimethamine |
| | 5-Flucytosine |
| Lymphoma | Ganciclovir Interferon a |
| | Trimetrexate |
| | Foscarnet |

## 1393. In renal failure, metabolic acidosis is due to

a) Increased fr production

b) Loss of HCO,

c) Decreased ammonia synthesis

d) Use of diuretics

Correct Answer - C
Ans. is 'c' i.e., Decreased ammonia synthesis
**The predominant reason for metabolic acidosis in C.R.E is decreased ammonia production.**

- *M*etabolic acidosis is a common disturbance in advanced chronic kidney disease
- The majority of patients can still acidly the urine but they produce less ammonia and, therefore, cannot excrete the normal quantity of protons in combination with this urinary buffer.

## 1394. Diagnostic feature of CRF is

a) Broad casts in urine

b) Elevated blood urea

c) Proteinuria

d) Bleeding diathesis

Correct Answer - A
Ans. is 'a' i.e., Broad casts in urine
**Casts *?***

- Urinary casts are formed only in the distal convoluted tubule[e] **(DCT)** or the collecting dud[e] (distal nephron).
- The proximal convoluted tubule and loop of henle are not the locations for cast formation.
- Casts are
- formed through the solidification of materials in the tubules of nephrons
- Later the material is flushed out of the kidney upon the production of more urine leaving a small solidified microscopic cylinder that can also contain what ever other materials that might be within the tubules of the kidneys at the time of cast formation.
- The microscopic detection of various types of casts can often be helpful diagnostic tool in the study of various types of renal diseases

## 1395. Eosinophilic meningitis is seen with all except?

a) Coccidiomycosis

b) Cryptococcal meningitis

c) Lepto meningeal metastasis

d) Helminthic infections

Correct Answer - B
Ans. is 'b' i.e., Cryptococcal meningitis
**Causes of eosinophilic meningitis**
**Infectious, parasitic causes**
**<u>Roundworm (nematode) infections - commonly present as eosinophilic meningitis</u>**

- Angiotronglylus cantonensis - migrating larvae inherently neurotropic
- Gnathostoma spinigerum - migrating larvae in visceral and/or neural tissues
- Baylisascaris procyonis - migrating larvae inherently neurotropic

**Tapeworm (cestode) infections - may present as eosinophilic meningitis**

- Cysticercosis -Cysts develop in CNS and/or visceral tissues

**Fluke (trematode) infections - occasionally cause eosinophilic meningitis**

- Paragonimus westermani - ectopic spinal or cerebral localization.
- Schistosomiasis - ectopic spinal or cerebral localization.
- Fascioliasis - ectopic CNS localization.

**Other roundworm infections which occasionally cause eosinophilic meningitis**

- Toxocariasis - migrating larvae

**Nonparasitic, infectious causes**

- Coccidioidomycosis
- Cryptococcosis - CSF eosinophilia rare
- Myiasis - with CNS penetration
- Virus and bacteria - are of uncertain causality
- Noninfectious causes
- Idiopathic hypereosinophilic syndromes
- Ventriculoperitoneal shunts
- Leukemia or lymphoma with CNS involvement (Hodgkin's)
- Nonsteroidal antiinflammatory drugs
- Antibiotics - ciprofloxacin, trimethoprim - sulfamethoxazole, intraventricular gentamicin or vancomycin
- Myelography contrast agents

## 1396. Christmas tree appearance of urinary bladder is seen in

a) Neurogenic bladder

b) Stress incontinence

c) Autonomous bladder

d) Enuresis

Correct Answer - A
Ans. is 'a' i.e., Neurogenic bladder

- *Christmas tree appearance of the bladder is seen in neurogenic bladder caused by detrusor hyperreflexia.*
- *Detrusor hyperreflexia is caused by lesions of the spinal cord above the sacral segments but below the pons. Such patients have noperception of bladder filling or emptying and voluntary voiding is not possible.*
- *Voiding when it does occur is involuntary with simultaneous contractions of the detrusor and external sphincter muscles.*
- *Common neurological condition resulting in detrusor hyperreflexia include*
- *Multiple sclerosis*
- *Myelodysplasia,*
- *Spinal cord trauma*
- *Spinal cord tumours,*
- *A-V malformatio not the spinal cord*
- *Radiologically, patients with long terms untreated detrusor hyperreflaxia have characteristic changes of the urinary tact.*
- *Bladder is vertically oriented, with an irregular contours, consistent with trabeculation. There are frequently multipel diverticula, Such a bladder is referred to as a christmas tree.*

| | | |
|---|---|---|
| | Automatic bladder | Autonomous bladder |
| *Lesion site* | Above T5 or higher | Cauda equina damage / lower motero neuron |
| *Manifestation* | Small spastic bladder | damage Large flaccid bladder |
| *Why this name* | urge comes again and again due to repeated contractions and hence empties repeatedly after some time | Has no urge sensation and continuous DRIBBLING occurs, So it is like the bladder is working all the time but Brain has no control over it and hence called autonomous bladder |
| *Radiological data* | Christmas tree appearance | No VUR but still bladder is large and holds lots of residual urine |

## 1397. All of the following are more commonly seen in Klebsiella Pneumonia than in Pneumococcal Pneumonia, Except:

a) Lower lobe involvement

b) Abscess Formation

c) Pleural Effusion

d) Cavitation

Correct Answer - A

The answer is A (Lower Lobe Involvement):

*Pneumococcal pneumonia has a predilection to involve the right lower lobe, whereas Klebsiella usually affects one of the upper lobes.*

| ***Features*** | ***Pneumococcal Pneumonia*** | ***Klebsiella Pneumonia*** |
|---|---|---|
| *Consolidation Pattern* | • *Lobar Consolidation with positive air bronchogram sign* | • *Lobar Consolidation with positive air bronchogram sign* |
| *Lobe Predilection* | • *The predilection to involve Lower Lobe (Any lobe may be involved)* | • The predilection *to involve Upper Lobe (Any lobe may be involved)* |
| | • *Usually Unilobar (Usually do not expand involved lobe)* | • *Often Multilobar (Tendency to expand involved lobe)* |
| *Abscess* | • *Abscess formation uncommon* | • *Abscess Formation common* |
| *Pleural* | • *Pleural Effusion* | • *Pleural Effusion* |

| | | |
|---|---|---|
| *Effusion* | *uncommon* | *common* |
| *Cavitation* | • *Cavitation is rare* | • *Cavitation is common* |

## 1398. Most common pattern of Pneumonia seen in Klebsiella infection is:

a) Lobar Pneumonia

b) Bronchopneumonia

c) Interstitial Pneumonia

d) Miliary Pneumonia

Correct Answer - A

**Answer is A (Lobar Pneumonia):**

*The most common pattern of Pneumonia seen in Klebsiella infection is Lobar Pneumonia*

***Streptococcus Pneumoniae (Pneumococcus) and Klebsiella are two common organisms that produce a lobar pattern of Pneumonia.***

**The radiographic pattern of pneumonia.**

- Lobar
- Lobular (bronchopneumonia)
- Interstitial

## 1399. Friedlander Pneumonia refers to Pneumonia caused by:

a) Klebsiella

b) Pneumococcus

c) H. lnfluenzae

d) Staphylococcus

Correct Answer - A
Answer is A (Klebsiella):
*Klebsiella Pneumonia is also known as Friedlander Pneumonia. Klebsiella initially described in 1882 by Friedlander was also known as Friedlander's bacillus. Community acquired Pneumonia caused by Friedlander's bacillus (Klebsiella) was termed as Friedlander Pneumonia.*

## 1400. the diffusion capacity of lung (DL) is decreased in all of the following conditions except

a) Inerstitial lung diseas

b) Goodpasture's syndrome

c) Pneumocystis Jiroveci

d) Primary pulmonary hypertension

Correct Answer - B

Ans. is 'b' i.e., Goodpasture's syndrome

**<u>Gas diffusion tests</u> :**

- Gas diffusion tests measure the amount of oxygen and other gases that cross the alveoli into the blood.
- These tests evaluate how well gases are being absorbed into the blood from lungs. Gas diffusion tests include.
- Carbon monoxide diffusing capacity (transfer factor DLcy)
- Arterial blood gases

**<u>Carbon monoxide diffusing capacity (DL)</u>:**

- *This measures how well the lung transfers a small amount of carbon monoxide into the blood0.*
- *Normally, in the lung, a gas has to cross the alveolar membrane, capillary membrane to reach the blood where it combines with hemoglobin.*

**<u>So quiet obviously the diffusion capacity of gas depends upon</u>**

- *Driving pressure of the gas*
- Surface area of alveolar capillary membrane
- Thickness of alveolar capillary membrane
- Diffusion coefficient of the gas

- Red blood cell volume.
- Reaction rate with hemoglobin and hemoglobin level of patient.
- *Degree of V/Q mismatching.*

## 1401. Rupture of berry aneurysm most commonly results in

a) Subarachnoid hemorrhage

b) Subdural hemorrhage

c) Extradural hemorrhage

d) Intra-parenchymal hemorrhage

Correct Answer - A
Ans. is 'a' i.e., Subarachnoid hemorrhage

| | |
|---|---|
| Most common cause of subarachnoid hemorrhage | *Trauma* |
| Most common cause of spontaneoussubarachnoid hemorrhage | *Rupture of Berry aneurysm* (or Saccular aneurysm) |

**Also know**
**Mycotic aneurysm ?**

- Mycotic aneurysm is caused by a septic embolus that weakens the wall of the vessel in which it lodges.

## 1402. Target BP before thrombolysis in ischemic stroke is below

a) 185/110 mmHg

b) 165/100 mm Hg

c) 145/100 Hg

d) 120/80 mm Hg

Correct Answer - A
Ans. is 'a' i.e., 185/110 mm Hg

- *Recommended target blood pressure before thrombolysis in patients with ischemic stroke is less than 185/110mm Hg.*

## 1403. The most common cause of malignant adrenal mass is

a) Adrenocortical carcinoma

b) Malignant phaeochromocytoma

c) Lymphoma

d) Metastasis from another solid tissue tumor

Correct Answer - D
Ans. is 'd' i.e., Metastasis from another solid tissue tumor
**The most common cause of adrenal tumors is metastasis from another solid tumor like breast cancer and lung cancer.**

| *Malignant* | Percentage |
|---|---|
| Adrenocortical carcinoma | 2-5% |
| Malignant pheochromocytoma | <I% |
| Adrenal neuroblastoma | <0- 1% |
| Lymphomas (incl. primary adrena lymphoma) | <1% |
| *Metastases (most frequent : Breast, lung)* | *15%* |

# 1404. The drug used in the management of medullary carcinoma thyroid is

a) Cabozantinib

b) Rituximab

c) Tenofovir

d) Anakinra

Correct Answer - A
Ans.is 'a' i.e., Cabozantinib
**Medullary thyroid cancers (MTCs) are neuroendocrine tumors of thyroid paraf011icular cells that do not concentrate iodine.**

- The primary treatment for MTC is extensive and meticulous surgical resection.
- There is a limited role for external-beam radiotherapy.
  **For patients with asymptomatic metastatic tumors generally less than 1 to 2 cm in diameter, growing in diameter less than 20 percent per year**
- *Syste*mic therapy is not required
- Such patients should be monitored for disease progression. Known sites of metastatic disease should be imaged by CT or MRI every 6 to 12 months, and potential new sites of disease should be imaged every 12 to 24 mont*hs.*
- *For* patients with metastatic tumors at least 1 to 2 cm in diameter, growing by at least 20 percent per year, or Or patients with symptoms related to multiple metastatic foci that cannot be alleviated with surgery or external beam radiotherapy
- Administer systemic treatment as part of a clinical trial.

- Forpatients with metastatic tumors at least I to 2 cm in diameter,

growing by at least 20 percent per year, or
**<u>for patients with .symptoms related to multiple metastatic foci who cannot participate in a clinical trial</u>**

- An oral tyrosine kinase inhibitor (TKI) is suggested, rather than traditional cytotoxic chemotherapy.
- For initial **TKI** therapy
- Cabozantinib or vandetanib rather than sorafenib or sunitinib.
- Cytotoxic chemotherapy, of which dacarbazine-based regimens such as cyclophosphamide-vincristinedacarbazine are preferable, is an alternative option for patients who cannot tolerate or who fail multiple TKIs

**Drugs used in medullary carcinoma thyroid**

| **<u>Tyrosine kinase inhibitors</u>** | **<u>Cvtotoxic chemotherapy</u>** |
|---|---|
| Cabozanitib | *Cyclophosphamide* |
| Vandetanib | *Vincristine* |
| Sorafenib | *Dacarbazine* |
| Sunitinib | |

# 1405. Incorrect about cerebral salt wasting syndrome

a) Urine sodium > 20mEq/d1

b) Hyponatremia

c) Fludrocortisone is used

d) Expansion of plasma volume

Correct Answer - D
Ans. is 'd' i.e., Expansion of plasma volume
**Cerebral salt wasting syndrome (renal salt wasting)**

- *Cerebral salt wasting (CSW) is characterized by hyponatremia and extracellular fluid depletion due to inappropriate sodium wasting in the urine in the setting of acute disease in central nervous system (CNS), usually subarachnoid hemorrhage.*
- *CSW is a much less common cause of hyponatremia in patients with cerebral injury than the syndrome of inappropriate ADH secretion (SIADH).*

**The pathophysiology of CSW is related to impaired sodium reabsorption, possibly due to the release of brain natriuretic peptide and/or diminished central sympathetic activity.**

- *R*egardless of the mechanism, sodium wasting can lead sequentially to volume depletion, increased ADH release, hyponatremia due to the associated water retention, and possibly increased neurologic injury.

***Laboratory findings***

- Hyponatremia with a low plasma osmolality
- An inappropriately elevated urine osmolality (above 100 mosmol/kgand usually above 300mosmol/kg)
- A urine sodium concentration above 40meq/L, and

- A low serum uric acid concentration due to urate wasting in the urine.

**CSW mimics all of the laboratory findings in the SIADH**

- *The* only clue to the presence of CSW rather than SIADH is clinical evident of extracellular volume depletion, such as hypotension and decreased skin turgor, and/or increased hematocrit, in a patient with a urine sodium concentration above 40meq/L
- Unlike SIADH, volume repletion in CSW leads to a dilute urine, due to removal of the hypovolemic stimulus to ADH release, and subsequent correction of the hyponatremia.

**Treatment**

- IV hypertonic saline solutions are employed to correct intravascular vloume depletion and hyponatremia and to replace ongoing urinary sodium loss
- Flurocortisone promotes sodium re-absorption

## 1406. A 70 kg adult male presents with serum sodium of 110 meq/dl. Calculate correction required in 24 hours

a) 100 mEq

b) 200 mEq

c) 300 mEq

d) 400 mEq

Correct Answer - D
Ans. is `d' i.e., 400 mEq
**Goals of therapy in hyponatremia**

- In patients who are treated to increase the serum sodium, the goal of initial therapy is to raise the serum sodium concentration by 4 to 6 meq/L in a 24-hour period.
- *In patients who require emergency therapy, this goal should be achieved quickly, over six hours or less; thereafter, the serum sodium can be maintained at a constant level for the remainder of the 24-hour period to avoid overly rapid correction.*
  ***Every effort should be made to keep the rise in serum sodium less than 9 meq/L in anv 24-hour period.***
- In general, the same rate of rise can be continued on subsequent days until the sodium is normal or near normal. The rationale for these recommendations is as follows:
- Sodium deficit = Total body water $^{x}$ desired SNa - Actual SNa = .6 x 70 x 120 - 110 =420 mEq
  **Treatment of hvponatrentia**
  **Aprviatitleaet_uIsupon risk stratification**
- The following general approach for treating patients with

hyponatremia is based upon the duration and severity of the hyponatremia and upon the presence and severity of symptoms:

**Disposition**

- Patients with acute or hyperacute hyponatremia, most patients with severe hyponatremia, and many symptomatic patients with moderate hyponatremia should be treated in the hospital.
- In contrast, patients with mild hyponatremia and asymptomatic patients with moderate hyponatremia usually do not require hospitalization.

**Emergency therapy**

- Aggressive therapy to raise the serum sodium as soon as possible (typically with hypertonic saline) is indicated in the following settings.
- *Patients with severe symptoms due to hyponatremia, such as seizures or obtundation.*
- *Patients with acute hyponatremia who have symptoms due to hyponatremia, even if such symptoms are mild. Because of osmotically driven water flow across the blood-brain barrier, an acute onset of hyponatremia can result in life-threatening cerebral edema. Thus, even mild symptoms in acute hyponatremia present a medical emergency that requires prompt and aggressive treatment with hypertonic saline to prevent brain herniation.*
- *Patients with hyperacute hyponatremia due to self-induced water intoxication, even if there are no symptoms at the time of initial evaluation. Brain herniation has been reported in such patients, and the serum sodium may worsen spontaneously due to delayed absorption of ingested water*
- *Symptomatic patients who have either acute postoperative hyponatremia or hyponatremia associated with intracranial pathology. As with hyperacute hyponatremia, herniation may occur; and the serum sodium may decrease further because of absorption of ingested water or the excretion of high concentrations of sodium in the urine (desalination).*

## 1407. Uricase used in the treatment of chronic gout is

a) Allopurinol

b) Benzbromarone

c) Pegloticase

d) Methotrexate

Correct Answer - C
Ans. is 'c' i.e., Pegloticase
**Pegloticase is a recombinant mammalian Uricase linked to polyethylene glycol (PEG) approved for the treatmen*t***

- *of Hype*ruricemia in patients with treatment refractory gout.
- Pegloticase facilitates the conversion of Uric acid into allantoin, which is far more soluble. Pegloticase is approved for intravenous administration and its use is associated with rapid and marked decline in serum uric acid levels.

***Agents inhibiting IL-1 action are used for the treatment of refractory Gout***

- *Anakinra*
- *Canakinumab*

**1408. A 14 year old boy presents wit recurrent episodes of hepatitis Opthalmoscopic evalution reveals KF rings and serum ceruloplasmin levels are < 20 mg/dl. The treatment of choice for initial therapy is**

a) Zinc

b) Penicillamine

c) Tetrathromolybdate

d) Hepatic transplantation

Correct Answer - A

**Answer is A (Zinc)**

*Presence of KF rings and decreased ceruloplasmin levels suggest the diagnosis of Wilson 's disease.*

*The patient in question is presenting with intial hepatic disease without any evidence of hepatic decompensation.*

*Zinc is the therapy of choice for patients with hepatitis or cirrhosis without evidence of hepatic decompensation or neuropsychiatric symptoms.*

## 1409. All are seen in acute HiV syndrome except

a) Diarrhoea

b) Pneumonia

c) Wight loss

d) Myelopathy

Correct Answer - B
Ans. is 'b' i.e., Pneumonia
Clinical findings in the acute HIV syndrome

General
- Fever
- Pharyngitis
- Lymphadenopathy
- Headache/retroorbital pain
- Arthralgias/myalgias
- Lethargy/malaise
- Anorexia/weight loss
- Nausea/vomiting/diarrhea

Neurologic
- Meningitis
- Encephalitis
- Peripheral neuropathy
- Myelopathy

Dermatology rash
- Erythematous ulceration maculo-papular
- Mucocutaneous

*[Ref Harrison 19th/e p. 1249]*

## 1410. Nephrocalcinosis is seen in all except

a) Polycystic kidney

b) Hyperparathyroidism

c) Medullary sponge kidney

d) Renal tubular acidosis

Correct Answer - A
Ans. is 'a' i.e., Polycystic kidney
**Causes of Nephrocalcinosis**

- Medullary sponge kidney
- Hyperparathyroidism
- Hypoparathyroidism
- Renal tubular acidosis (specifically distal RTA)
- Renal tuberculosis
- Renal papillary necrosis
- Hyperoxaluria
- Immobilization
- Milk-alkali syndrome
- Hypervitaminosis D
- Sarcoidosis

## 1411. Round pneumonia is seen with

a) Streptococcal pneumonia

b) Kerosene oil aspiration

c) Lung cancer

d) Mendelson syndrome

Correct Answer - A
Ans. is 'a' i.e., Streptococcal pneumonia

- Streptococcus Pneumoniae (pneumococcus) is the most common organism responsible for round pneumonia.
- Round Pneumonia is spherical pneumonia that is usually seen in children due to the lack of collateral air drift.
- Streptococcus Pneumoniae (pneumococcus) is the most common organism responsible for round pneumonia.
- Round pneumonia is important as they may simulate a tumor mass from which they must be differentiated

## 1412. An elderly male admitted for Pneumonia presents with diarrhea and gripping abdominal pain five days after discharge from the hospital. Drug which is likely to benefit is

a) Imodium

b) Metranidozole

c) Diphenoxylate

d) Levofloxacin

Correct Answer - D
Ans. is 'd' i.e., Levofloxacin

- *Dev*elopment of pneumonia and gastrointestinal symptoms (diarrhea & gripping abdominal pain) within 10 days after discharge from hospital hints to a possible diagnosis of Legionnaire's disease. The drugs of choice for legionnairs's disease include Azithromycin and Respiratory Fluoroquinolones such as levofloxacin, gatifloxacin, Gemifloxacin and Moxifloxacin
- It is a case of legionnaire's disease.
- Legionnaires disease usually presents as atypical pneumoniae.
- The unique feature of legionnaires disease is that the clinical manifestation of this disease are usually more severe than those of most atypical pneumonias and the course and prognosis of legionella pneumonia more closely resemble those of bacteremic pneumococcal pneumonia than those ofpneumonia due to other organisms

**Think about the diagnosis as legionaire's disease whenever the**

**question talks about a pneumonia like picture along with any of the following -**

- Gastrointestinal disturbances such as diarrhoea.
- Neurological abnormalities such as confusion and headache altered sensorium.
- High fever (> 40°C or > 104°F)
- Numerous neutrophils, but no organisms revealed by gram's staining of respiratory secretions.
- *Failure to respond to $ lactam drugs (penicillins and cephalosporins) and aminoglycoside antibiotics. Hyponatremia (S.Na- < 131 meq/1)*
- Elevation in liver function tests.
- *Oc*currence of illness in an environment in which the potable water supply is known to be contaminated with legionella.
- Onset of symptoms within 10 days of discharge from hospital.
- Occurence of illness in immunocompromised individual

## 1413. Causes of haemorrhagic pleural effusion are all except

a) Pulmonary infarction

b) Mesothelioma

c) Bronchial adenoma

d) Tuberculosis

Correct Answer - C
Ans. is 'c' i.e., Bronchial adenoma
**Causes of hemorrhagic pleural effusion**

- Trauma
- Malignancy
- Postpericardiotomy syndrome
- Asbestos related effusion
- Tuberculosis

## 1414. Following is characteristic neurologic finding in primary amyloidosis

a) Peripheral motor and sensory neuropathy

b) Peripheral neuropathy associated with cerebral manifestation

c) Guillain - Barre type of syndrome

d) Spinal cord compression in thoracic region

Correct Answer - A

Ans. is 'a' i.e., Peripheral motor and sensory neuropathy

- ATTR usually presents as a syndrome of familial amyloidotic polyneuropathy or familial amyloidotic cardiomyopathy.
- Peripheral neuropathy usually begins as a lower-extremity sensor and motor neuropathy and progresses to the upper extremities.
- Autonomic neuropathy is manifest by gastrointestinal symptoms of diarrhea with weight loss and orthostatic hypotension.

## 1415. Reactive arthritis is usually caused by

a) Shigella flexneri

b) Shigella boydii

c) Shigela shiga

d) Shigela dysentriae

Correct Answer - A
Ans. is 'a' i.e., Shigella Flexneri
**Organisms that have been associated with ReiterArthritis include the following:**

- C trachomatis (L2b serotype)
- Ureaplasma urealyticum
- Neisseria gonorrhoeae
- Shigella flexneri
- Salmonella enterica serovars Typhimurium
- Mycoplasma pneumoniae
- Mycobacterium tuberculosis
- Yersinia enterocolitica and pseudotuberculosis
- Campylobacter jejuni
- Clostridium difficile
- Beta-hemolytic (example, group A) and viridans streptococci

## 1416. Dose of rTPA in ischaemic stroke is

a) 60 mg

b) 90 mg

c) 100 mg

d) 120 mg

Correct Answer - B
Ans. is 'b' i.e., 90 mg

- Recommended dose for thrombolysis with IV TPA is 0·9 mg/kg with the maximum dose being 90 mg. 10% should be given as a bolus over one minute, followed by remaining 90% as a continuous infusion over 60 minutes.

## 1417. Cerebral angiography was performed by

a) Sir Walter Dandy

b) George Moore

c) Seldinger

d) Egas Moniz

Correct Answer - D
Ans. is 'd' i.e., Egas Moniz

- ***Egas Moniz first performed cerebral Angiography in 1927.*** *n He received the Nobel Prize for developing for developing frontal leucotomy as a treatment* for *psychiatric diseases.*

## 1418. Mauriac's syndrome is characterized by all except

a) Diabetes

b) Obesity

c) Dwarfism

d) Cardiomegaly

Correct Answer - D
Ans. is D i.e., Cardiomegaly
**Mauriac Syndrome**
Children with poorly controlled type I diabetes may develop Mauriac syndrome. It is characterized by : -

- Growth attenuation
- Delayed puberty
- Hepatomegaly
- Abnormal glycogen storage and steatosis
- Cushingoid features
- Rare in the modern era of insulin therapy but is occasionally reported.

## 1419. Which of the following is associated with hyponatremia and low osmolality

a) Hyperlipidemia

b) SIADH

c) CHF

d) CKD

Correct Answer - C
Ans. is 'c' i.e., CHF

- CHF is characterised by low perfusion of kidneys stimulating R.A.A.S and resultant absorption of salt and disproportionate amout of water would lead to hyponatremia with decreased osmolality.
- *Isotonic hyponatremia is seen with hyperlipidemia and hvperproteinemia like in paraproteinemia.*
- *Intravenous immunoglobulin therapy also interferes with measurement of serum sodium.*
- Major causes of hyponatremia

**Disorders in which ADH levels are elevated**

- Effective circulating volume depletion
- True volume depletion
- Heart failure
- Cirrhosis
- Thiazide diuretics
- Syndrome of inappropriate ADH secretion, including reset osmostat pattern
- Hormonal changes
- Adrenal insufficiency
- Hypothyroidism
- Pregnancy

**Disorders in which ADH levels may be appropriately suppressed**

- Advanced renal failure
- Primary polydipsia
- Beer drinker's potomania

**Hyponatremia with normal or elevated plasma osmolality**

- High plasma osmolality (effective osmols)
- Hyperglycemia
- Mannitol
- High plasma osmolality (ineffective osmols)
- Renal failure
- Alcohol intoxication with an elevated serum alcohlo concentration
- Normal plasma osmolality
- Psedohyponatremia (laboratory artifact)
- High triglycerides
- Chloestatic and obstructive jaundice (lipoprotein x)
- Multiple myeloma
- Absorption of irrigant solutions
- Glycine Sorbitol Mannitol

## 1420. Bence jones proteinuria is best detected by

a) Dipstick method

b) Sulfosalicylic acid

c) Heat test

d) Electrophoresis

Correct Answer - D
Ans. is `d' i.e., Electrophoresis
**Bence Jones proteins are seen in multiple myeloma.**

- Urinary protein electrophoresis will exhibit a discrete protein peak.
- *In myeloma plasma cells produce immuno-globulin of a single heavy and light chain, a monoclonal protein commonly referred to as a paraprotein.*
- *Heat test is false negative in 50% of patients with light chain myeloma.*
- *Dipstick detects albumin and not paraproteins.*

## 1421. Which of the following statements about Hematochromatosis is not true

a) Hypogonadism may be seen

b) Arthropathy may occur

c) Diabetes Mellitus may develop

d) Desferrioxamine is treatment of choice

Correct Answer - D
Answer *is* D (Desferrioromine is treatment of choice):
*The therapy of hematochromatosis involves removal of excess body iron.*
*Iron removal is best achieved by periodic phlebotomies which is the treatment of choice for Hematochromosis.*
*Chelating agents like desferoxamine are less effective and indicated when anemia or hypoproteinemia is severe enough to preclude phlebotomy.*
*Chelating agents **are** not the treatment of choice for Hematochromatosis.*

## 1422. HIV RNA by PCR can detect as low as

a) 30 copies viral RNA/ml of blood

b) 40 copies viral RNA/ml of blood

c) 50 copies of viral RNA/ml of blood

d) 60 copies of viral RNA/ml of blood

Correct Answer - B
Ans. is 'b' i.e., 40 copies viral RNA/ml of blood

- This assay generates data in the form of number of copies of HIV RNA per milli litre of serum or plasma and can reliably detect as few as 40 copies of HIV RNA per mili litre of plasma.
- Research based assay can detect down to one copy/ml.

## 1423. Biomarker not involved in acute kidney injury is

a) NGAL

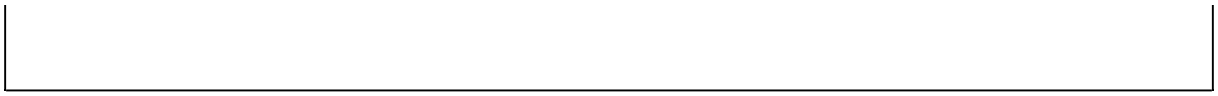
b) KIM 1

c) Micro RNA 122

d) Cystatin C

Correct Answer - C
Ans. is 'c' i.e., Micro RNA 122
**Biomarkers of acute kidney injury**

- *Alanine aminopeptidase (AAP)*
- *Alkaline phosphatase (AP)*
- *a-glutathione-S-transferase (a-GST)*
- *y-glutamyl transpeptidase (yGT)*
- *N-acetyl-13-glucosaminidase (NAG)*
- pfmicroglobulin
- *a imicroglobulin*
- *Retinol-binding protein (RBP)*
- *Cystatin C*
- Microalbumin
- *Kidney injury molecule-1 (KIM-1)*
- *Clusterin*
- *Neutrophil gelatinase associated lipocalin (NGAL)*
- *Interleukin-18 (IL-18)*
- *Cysteine-rich protein (CYR-61)*
- *Osteopontin (OPN)*
- *Fatty acid binding protein (FABP)*
- *Sodium/hydrogen exchanger isoform (NHE3)*
- *Exosomal fetuin-A*



## 1424. Most common site of cerebral infarction is in the territory of

a) Anterior cerebral artery

b) Middle cerebral artery

c) Posterior cerebral artery

d) Posterior inferior cerebellar artery

Correct Answer - B
Ans. is 'b' i.e., Middle cerebral artery
*Hemiplegia most commonly occurs due to lesion of middle cerebral artery*

## 1425. Hemiplegia is most often caused by thrombosis of ?

a) Anteiror cerebral artery

b) Middle cerebral artery

c) Posterior cerebral artery

d) Basiliar artery

Correct Answer - B
Ans. is 'b' i.e., Middle cerebral artery
**Middle Cerebral Artery**

- Deep branches of the middle cerebral artery on the lenticulostriate branches supply the internal capsule (posterior limb).
- Motor tracts are densely packed in this region and hence occlusion of deep branches or lenticulostrials branches leads to Densse Hemiplegia/Pure motor Hemiplegia.
- Anterior choroidal artery supplies the posterior limb of internal capsule (and not anterior limb of internal capsule).
- Anterior chorodial artery arises from the internal carotid artery and supplies the posterior limb of internal capsule. The complete syndrome of anterior choroidal artery occlusion consists of contralateral hemiplegia hemianesthesia (hypoesthesia) and homonymous hemianopia

**Posterior Cerebral Artery**

- The posterior cerebral artery supplies the midbrain, thalamus lateral geniculate bodies, posterior of chroid plexus, occipital lobes, inferior and medial aspect of the temporal lobe and posterior inferior areas of the parietal lobe

**Occlusion of the Posterior Cerebral Artery usually results in two common clinical syndrome depending on the areas**

**involved**

| P1 Syndrome | P2 Syndrome |
| --- | --- |
| Occlusion of the proximal segment ofPCA from its origin to its union withthe posterior communicating artery | Occlusion of the distalsegment of PCA distal to the junction of PCA with theposterior communicating artery |
| P1 syndrome present primarily withthe following signs | P2 syndrome presents primarily withthe following signs |
| Midbrain signs | Temporal lobe signs |
| Thalamic signs | Occipital lobe signs |
| Subthalamic signs | |

## 1426. True statement about Pneumocystic Jiroveci is:

a) Often associated with CMV infection

b) Usually diagnosed by sputum examination

c) Infection occurs only in immunocompromised patients

d) Always associated with Pneumatocele

Correct Answer - B
Pneumocystis Jiroveci is usually diagnosed by sputum examination.

**Ref:** Medical Microbiology By Jawetz, 24th Edition, Pages 648-49; Washington Manual of Pulmonary Medicine, 2006, Page 104; Pneumocystis Pneumonia By Walzer, Cushion, 3rd Edition, Page 418; Harrison’s Principles of Internal Medicine, 16th Edition, Pages 1194-95

## 1427. Indication for prophylaxis in pneumocystis carini pneumonia include

a) $CD_4$ count < 200

b) Tuberculosis

c) Viral load > 25,000 copies/ml

d) Oral candidiasis

Correct Answer - A

Ans. is 'A' i.e., $CD_4$ count < 200

**PROPHYLAXIS OF PNEUMOCYSTIC CARINI PNEUMONIA**

**Primary prophylaxis is indicated for**

- Patients with CD4- cell counts of< 200/4
- History of oropharyngeal candidiasis

**Secondary prophylaxis is indicated for**

- Both HIV infected and non-HIV infected patients.
- Who has recovered from pneumocystosis

**Primary and secondary prophylaxis may be discontinued in HIV infected persons once.**

- CD4+ counts have risen to > 200/p1 and remained at that level for 3 months.

**Also know**

**First choice agent for prophylaxis**

- *Trimethoprim, sulphamethoxazole.*

**Other agents used in prophylaxis.**

- Dapsone, pentamidine.

## 1428. C V junction abnormalities are seen in all of the following except

a) Rheumatoid arthritis

b) Ankylosing spondylitis

c) Odontoid dysgenesis

d) Basilar invagination

Correct Answer - B

**Answer- B. Ankylosing spondylitis**

**Developmental and acquired abnormalities**

**Atlanto axial instability**

1. Errors of metabolism (e.g. Morquio's syndrome)
2. Infections (e.g. Grisel's syndrome)
3. Inflammatory (e.g. rheumatioid arthritis, Psoriasis, Ankylosing Spondylitis)
4. Traumatic atlanto-axial dislocation, Atlantal-dislocation, Down syndrome
5. Malignancy (e.g. Chordoma, Plasmacytoma, Osteoblastoma, Neurofibromatosis)
6. Degenerative (e.g. fetal warfarin syndrome, Conradi's Syndrome, Goldenhar syndrome

## 1429. Most common cause of unilateral pedal edema

a) Pregnancy

b) Lymphedema

c) Venous insufficiency

d) Milroy disease

Correct Answer - C
Ans. is 'c' i.e., Venous insufficiency
**<u>The most likely cause of leg edema in patients over age 50 is venous insufficiency.</u>**

- Venous insufficiency affects up to 30% of the population, whereas heart failure affects only approximately 1%.
- The most important cause of unilateral pedal edema is venous insufficiency.

***<u>Milroys disease</u> :***

- The defect in Milroy's disease is present from birth and symptoms are usually first experienced in childhood.
- *The most common problem is one-sided leg swelling, unilateral edema, which is progressive and can affect both legs.*
- *Impaired intestinal lymphatics can cause steatorrhea due to impaired transport of chylomicrons*

## 1430. All of the following statements about Pulsus Bigeminus are true, except:

a) Must be distinguished from Pulsus Alternans

b) Is a sign of digitalis toxicity

c) Compensatory pause is absent

d) Rhythm is Irregular

Correct Answer - C
Answer is C (Compensatory pause is absent):
*Pulsus Bigeminus is associated with a compensatory Pause. Compensatory pause is absent in Pulsus Alternans*
*Pulsus Bigeminus is a disorder of rhythm (Irregular rhythm) caused by a normal heat alternating with a premature contraction and a compensatory pause resulting in alternation of the strength of pulse. The stroke volume of the premature beat is diminished in relation to that of the normal beats, and the pulse varies in amplitude accordingly. Pulsus Bigeminus most closely mimics Pulsus Alternans from which it must be distinguished. In Pulsus Alternans the rhythm is regular and the compensatory pause is absent.*

## 1431. Pulsus Bigeminus is seen in therapy with:

a) Digitalis

b) Beta Blockers

c) ACE Inhibitors

d) Calcium Channel Blockers

Correct Answer - A
Answer is A (Digitalis)
*Pulsus Bigeminus is recognized as a cause of digitalis toxicity. Pulsus Bigeminus is a disorder of rhythm (Irregular rhythm; arrhythmia) most commonly caused by Premature Ventricular Contractions that results in a pulse with irregular rhythm that alternates in amplitude (pressure) from beat to beat. The most common cause of Pulsus Bigeminus is Digitalis and Pulsus Bigeminus is recognized as a cause of digitalis toxicity.*

## 1432. Which is best for plaque morphology

a) CCTA

b) MRI

c) CMR

d) IVUS

Correct Answer - A
Ans. is 'a' i.e., CCTA

- Coronary lesions prone to rupture have a distinct morphology compared with stable plaques, and provide a unique opportunity for noninvasive imaging to identify vulnerable plques before they lead to clinical events. This can be achieved using a non-invasive cardiac imaging using coronary CT angiography.
- o Large plaque volume, low CT attenuation, napkin-ring sign, positive re-moedlling, and spotty calcification are all associated with a high risk of acute cardiovascular events in patients. Intravascular USG can give comparable results *but is an invasive test*

## 1433. Most common cause of heart block in infants is

a) SLE

b) Surgery for congentital heart disease

c) Viral myocarditis

d) Rheumatic fever

Correct Answer - B

Ans. is 'b' i.e., Surgery for congentital heart disease

**In children, the most common cause of permanent acquired complete AV block is surgery for congenital heart disease.**

- *Postsurgical completer atrioventricular block (A VB) is the most common cause for acquired AV block in children, resulting from trauma to the AV node at time of surgery (i.e., hemorrhage, ischemia, necrosis, inflammation, traumatic disruption).*

**The second most common cause is congenital herat disease associated with complete AV block.**

- Other etiologies of acquired AV block are often reversible and include :
- Digitalis and other drug intoxications.
- Viral myocarditis.
- Acute rheumatic fever, Lyme disease, and infectious mononucleosis.

## 1434. S2 is best appreciated in:

a) 3rd left intercostal space

b) 2nd right intercostal space

c) 4th left intercostal space

d) 5 left intercostal space

Correct Answer - A
Answer *is* A (3rd left intercostal space)
*Best areas to auscultate for both components of the second heart sound (A2 and P2) are either the left sternal border at the level of second intercostal space (Pulmonic area) or the left sternal border at the level of third intercostal space (Erb's point).*
*The second heart sound has two components A2 (from Aortic closure) and P2 (from pulmonary closure). P2 is a soft sound that is poorly transmitted. It is best heard at the pulmonic area and is transmitted only as far as the Erb's point. A2 is a loud sound best heard over the aortic area but since it is widely transmitted it may be heard across all areas of the chest even as far as the apex. Second heart sound (S2) is best heard over the pulmonic area (Since both A2 and P2 can be heard at the pulmonic area). Note that even at the pulmonic area A2 is louder than P2. The other area to auscultate for both components of the second heart sound is at the left sternal border of the third intercostal space (Erb 's point)*

## 1435. Rytand's murmur is seen in

a) A-V Block

b) Mitral stenosis

c) Aortic stenosis

d) Aortic regurgitation

Correct Answer - A
Ans. is 'a' i. e.,A-V Block
**Rytand Murmur**

- Rytan 's murmur is mid-diastolic (or late-diastolic) murmur that is heard in patients with complete artioventricular heart block**.**
  **Rytand's murmur is best heard at the apex and may be confused with mitral stenosis.**
- *The slow heart rate, variable duration of the murmur changing intensity of the S I and lack of opening snap are* *helpful*

**Also know**

| | | |
|---|---|---|
| Carey Coombs murmur | → | Rheumatic fever |
| Austin Flint murmur | → | Aortic regurgitation |
| Graham-Steel murmur | → | Pulmonary regurgitation |
| Rytands murmur | → | Complete heart block |
| Docks murmur | → | Left Anterior Descending (LAD) artery stenosis |
| Mill wheel murmur | → | Due to air emboli (air in PV cavity) |

## 1436. Most common mechanism of arrhythmia ?

a) Re-entry

b) Early after depolarization

c) Late after depolarization

d) Automaticity

Correct Answer - A
**Answer- A. Re-entry**
Re-entry appears to be basis for most abnormal sustained Supra Ventricular Tachycardias (SVTs) and VTs.
**Examples of re-entry are :-**

- VF due to acute myocardial ischemia and

# 1437. -30 to -90 degree axis deviation indicates

a) Left Axis Deviation

b) Right Axis Deviation

c) Extrene Right Axis Deviation

d) Normal Cardiac Axis

Correct Answer - A
Ans. is 'a' i.e., Left Axis Deviation
**Cardiac axis**

- *The electrical signal recorded on the electrocardiogram (ECG) contains information relative to direction and magnitude of the various complexes.*
- *The average direction of any of the complexes can be determined.*

**Normal Cardiac Axis**

- *The normal QRS electrical axis, as established in the frontal plane, is between -30 and 90° (directed downward or inferior and to the left) in adults.*

**Left Axis Deviation**

- An axis between -30° and -90° (directed superior and to the left) is termed left axis deviation. Right Axis Deviation
- If the axis is between 90° and 180° (directed inferior and to the right), then right axis deviation is present. Extreme Right Axis Deviation
- An axis between -90' and -180° (directed superior and to the right) is referred to as extreme right or left axis. Indeterminate
- If the QRS is equiphas*ic in all leads with no dominant QRS deflection, it is indeterminate axis.*

**Causes of axis deviation include**

| Right axis deviation | Left axis deviation |
|---|---|
| *Normal variation (vertical heart with an axis of 90°)* | Normal variation (physiologic, often with age) |
| Mechanical shifts, such as inspiration and emphysema | Mechanical shifts, such as expiration, high diaphragm (pregnancy, ascites, abdominal tumor) |
| Right ventricular hypertrophy | Left ventricular hypertrophy |
| Left posterior fascicular block | Left bundle branch block |
| Dextrocardia | Left anterior fascicular block |
| Ventricular ectopic rhythms | Congenital heart disease (prim um atrial septal Hefect, endocardial cushion defect) |
| Ventricular ectopic rhythms | Emphysema |
| Pre-excitation syndrome (Wolff-Parkinson-White | Hyperkalemia |
| Lateral wall myocardial infarction | Ventricular ectopic rhythms |
| Secundum atrial septal defect | Pre-excitation syndromes (Wolff-Parkinson-White |
| | Inferior wall myocardial infarction |

## 1438. Left Axis Deviation is seen as

a) Positive in Lead I and Positive in Lead II

b) Positive in Lead I and Negative in Lead II

c) Negative in Lead I and Negative in Lead II

d) Negative in Lead I and positive in Lead II

Correct Answer - B

Answer is B (Positive in Lead **I** and Negative in Lead **II)**

***Left axis deviation is seen as positive deflexion in Lead I and a Negative deflection in Lead II.***

Calculating the cardiac axis:

| | Normal Axis | Right axis deviation | Left axis deviation |
|---|---|---|---|
| Lead I | Positive | Negative | *Positive* |
| Lead II | Positive | Positive or negative | *Negative* |
| Lead III | Positive or negative | Positive | *Negative* |

Note:

Lead I : POSITIVE BETWEEN -90 TO +90 (CLOCKWISE) Lead II : POSITIVE BETWEEN -30 TO +150 (CLOCKWISE) Lead III : POSITIVE BETWEEN +30 TO -150 (CLOCKWISE)

## 1439. LBBB is seen with all except

a) Acute MI

b) Ashmann syndrome

c) Hypokalemia

d) Hyperkalemia

Correct Answer - C
Ans. is 'c' i.e., Hypokalemia
**Causes of LBBB are :-**

- Aortic stenosis
- *Ischaemic heart disease*
- Hypertension
- Dilated cardiomyopathy
- *Anterior MI*
- *Primary degenerative disease (fibrosis) of the conducting system (Lenergre disease)*
- *Hyperkalaemia*
- Digoxin toxicity

**Ashmann phenomenon (has both LBBB and RBBB)**

- *Atrial fibrillation has a narrow complex qRS but Ashmann phenomenon seen in atrialfibrillation is characterized by broad complex qRS with usually a RBBB morphology. Thus if an impulse lands on the bundle of HIS and finds the right bundle refractory then RBBB will occur. Also remember that the refractory period of right fascicle ix more than that of the left fascicle resulting in RBBB mostly in these patients.*
- *ECG findings of LBBB*
- *Normally the septum is activated from left to right, producing small Q waves in the lateral leads. In LBBB, the normal direction of septal*

*depolarisation is reversed (becomes right to left), as the impulse spreads first to the RV via the right bundle branch and them to the LV via the septum.*

- *This sequence of activation extends the qRS duration to > 120 ms and eliminates the normal septal Q waves in the lateral leads.*
- *The overall direction of depolarisation (from right to left) produces tall R waves in the lateral leads (IaVLV5V6) deep S waves in the right precordial leads ($V_4$ R) and usually leads to left axis deviation.*
- *As the ventricles are activated sequentially (right, then left) rather than simultaneously, this produces a broad or notched (ˆW-shaped) R wave in the lateral leads.*
- *Non-concordance in ST segment and T wave changes.*
- *The point is that the two fasciles of bundle of his have different refractory periods with the right fascicle having higher refractory period than the left.*
- *This means that if an impulse lands on the bundle of HIS and finds the right bundle refractory then RBBB will occur.*
- *I*n atrial fibrillation because of faster conduction, normally we see narrow complex qRS but sometimes we may see broad complex qRS also which is technically called Ashmann phenomenon.
- Mostly in Ashmann phenomenon RBBB is seen based on the physiological principle of refractory period of right fascicle more than the left one. However, rarely LBBB can also be seen if the impulse lands to find the left fascicle refractory. Irrespective of RBBB or LBBB, broad complex qRS will occur in case of atrial fibrillation and Ashmann phenomenon is occurrence of broad complex qRS in atrial fibrillation and not the occurrence of RBBB as is the popular perception.
- Hyperkalemia can cause defective repolarization and hence cause Bundle branch block that culminates in sine wave pattern.
- In acute MI, ischemia can damage the left bundle leading to LBBB.

**1440. A patient in regular rhythm presents with absent P waves on ECG. Leads II, III and AVF reveal a Saw-Tooth Pattern. Which of the following is the most likely diagnosis:**

a) Atrial Fibrillation

b) Atrial Flutter with Variable Block

c) Atrial Flutter with Fixed Block

d) Multifocal Atrial Tachcardia

Correct Answer - C

Answer *is* C (Atrial Flutter with Fixed Block)

*The absence of any discernible P waves on ECG, together with the presence of Saw Tooth Flutter waves in inferior leads (Leads **II, III** and AVF) strongly suggests a diagnosis of Atrial Flutter. The presence of a regular rhyti,,o suggests a Fixed Block .*

| **Findings/Features** | **Diagnosis** |
|---|---|
| Irregular Rhythm with no discernible P wave (Chaotic base line with fibrillary f waves) | Atrial Fibrillation |
| *Irregular rhythm with no discernible P wave (Saw tooth ¸Ilutter* waves especially in inferior leads and VI) | *Atrial Flutter with variable block* |
| *Regular rhythm with no discernible P waves (Saw tooth flutter* waves especially in inferior leads and V1) | *Atrial Flutter with fixed block* |
| Irregular Rhythm with multiple P wave morphologies (P waves Discernible) and Varying RR intervals | Multifocal Atrial Tachycardia |

and Varying PR Intervals

## 1441. A wide and notched P wave is typically seen in:

a) Mitral Stenosis

b) Cor-Pulmonale

c) COPD

d) Pulmonary embolism

Correct Answer - A
Answer *is* A (Mitral Stenosis)
*Mitral Stenosis is typically associated with a Wide and Notched P wave from Left Atrial Enlargement (LAE) Cor-Pulmonale, COPD and Pulmonary embolism are all associated with Right Atrial Enlargement resulting in a Tall P wave (not a wide p wave)*

## 1442. Wrong abour continuous murmur

a) Seen with coarctation of aorta

b) Peaks at S2

c) Heard both in systole and diastole

d) Increase on squatting

Correct Answer - D
Ans. is 'd' i.e., Increase on squatting

- A continuous murmur is defined as one that begins in systole and extends through $S_2$ into part or all of diastole.
- It need not occupy the entire cardiac cycle.
- Continuous murmurs are not affected by dynamic auscultation maneuvers like squatting etc.
- They can oftern be difficult to distinguish from individual systolic and diastolic murmurs in patients with mixed valvular heart disease.
- The classic example of a continuous murmur is that associated with a patent ductus arteriosus, which usually is heard in the second or third interspace at a slight distance from the sternal border.

## 1443. Banana shaped left ventricle is seen in

a) HOCM

b) DCM

c) RCM

d) Takotsubo cardiomyopathy

Correct Answer - A
Ans. is 'a' i.e., HOCM

| **Spherical ventricle** | **Dilated cardiomyopathy** |
|---|---|
| Apical ballooning | Stress cardiomyopathy / Tako-Tsubo |
| Spade-shaped ventricle | Apical hypertrophic cardiomyopathy |
| Distortion of ventricle | Myocardial infarctions / aneurysms / remodeling |
| Banana - shaped ventricle | Hypertrophic cardiomyopathy |

## 1444. A QRS duration between 100 and 120 milliseconds suggests all of the following, Except:

a) Normal

b) Left anterior Fascicular Block

c) Left posterior Fascicular Block

d) Left Bundle Branch Block

Correct Answer - D
Answer *is* D (Left Bundle Branch Block)
*Left Bundle Branch block is typically associated with a QRS duration greater than 120 milli seconds.*
*Partial Blocks (Fascicular or hemiblocks) in the left bundle system (left anterior or posterior fascicular blocks) generally do not prolong the QRS duration substantially and QRS duration typically remains less than 120 milliseconds.*

# 1445. Wide QRS complex 0.12 seconds may be seen in all of the following, except

a) Hyperkalemia

b) Wolf Parkinson White Syndrome

c) Ventricular Tachycaridia

d) Left Anterior Fascicular Block

Correct Answer - D

Ans. is 'd' i.e., Left Anterior Fascicular Block

- *Le*ft Anterior Fascicular Block is a partial block in the left bundle system and does not prolong the QRS duration
- significantly. Typically the QRS duration is slightly prolonged and remains between 0.10 to 0.12 seconds.

**Major causes of a wide ORS complex**

- *Intr*insic intraventricular conduction delay o Left bundle branch block and variants
- Right bundle branch block and variants o Other nonspecific IVCD patterns
- Extrinsic intraventricular conduction delay
- Hyperkalemia
- Drug-induced - type 1 antiarrhythmic drugs and related sodium channel blocking agents (eg, tricyclic antidepressants and phenothiazines)
- Ventricular beat o Premature o Escape
- Paced
- Ventricular preexcitation
- Wolff-Parkinson-White (WPW) pattern and variants
- Factitious
- ECG unintentionally recorded at fast paper speeds (50 or 100 mm/s)

**Wide QRS complex tachyarrhythmias**

- Ventricular tachycardia
- *Supraventricular tachycardia or atrial fibrillation or flutter with aberrant intraventricular conduction due to:*
- Bundle branch block
- Atrioventricular bypass tract (preexcitation syndromes with orthodromic conduction

## 1446. Wide QRS complex is typically seen in

a) Bundle Branch block

b) Sick sinus syndrome

c) Mobitz type I block

d) Mobithz type II block

Correct Answer - A
Ans. is 'a' i.e., Bundle Branch block

- Repeat from previous session.
- Intrinsic intraventricular conduction delays such as left bundle block and right bundle branch block are associated with wide QRS complex.

## 1447. ST elevation is seen in all of the following conditions *except :*

a) Myocardial infarction

b) Coronary artery spasm

c) Constrictive pericarditis

d) Ventricular aneurysm

Correct Answer - C
Answer is C (Constrictive pericarditis)
ST segment is measured from the end of QRS complex to the beginning of the T wave, and represents the time interval between ventricular depolarization and repolarization.

## 1448. Inverted T waves are seen in

a) Hyperkalemia

b) Hyperthermia

c) Wellen syndrome

d) Coronary syndrome

Correct Answer - C
Ans. is 'c' i.e., Wellen syndrome

- Severe anterior wall Ischemia (with or without infarction) may cause prominent T-wave inversions in the precordial leads. This pattern (sometimes referred to as Wellens T-waves) is usually associated with a high-grade stenosis of the left anterior descending coronary artery.
- Hyperkalemia has tall Tented T-waves.
- Coronary syndrome Xis characterised by blockage of perforators while the epicardial coronary artery is normal. In these patients stenting of coronaries is not useful. Nitrates are mainstay of therapy.

## 1449. Low QRS voltage on ECG indicates ?

a) Pulmonary embolism

b) Pericardial effusion

c) Cor pulmonale

d) Infective endocarditis

Correct Answer - B
Ans. is 'b' i.e., Pericardial effusion
**Causes of low voltage QRS complexes**

- Adrenal insufficiency
- Anasarca
- Artifactual or spurious, eg, unrecognized standardization of ECG at one-half the usual gain (i.e., 5 mm/mv)
- Cardiac infiltration or replacement (e.g., amyloidosis, tumor)
- Cardiac transplantation, especially with acute or chronic rejection
- Cardiomyopathy, idiopathic or secondary
- Chronic obstructive pulmonary disease
- Constrictive pericarditis
- *Hy*pothyroidism, usually with sinus bradycardia
- Left pneumothorax (mid-left chest leads)
- Myocardial infarction, extensive
- Myocarditis, acute or chronic
- *N*ormal varian
- Obesity
- Pericardial effusion
- Pericardial tamponade, usually with sinus tachycardia
- Pleural effusions

## 1450. Which of the following is cause of RBBB

a) It can occur in a normal person

b) Pulmonary embolism

c) Corpulmonale

d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above
**Causes of RBBB**

- Normal physiological
- Pulmonary embolism/corpulmonale
- Pulmonary artery hypertension
- ASD
- Rheumatic heart disease

## 1451. Alternating RBBB with Left anterior hemiblock is seen in

a) 1' degree heart block

b) Complete heart block

c) Mobitz type II block

d) Bi-fascicular block

Correct Answer - D
Ans. is 'd' i.e., Bi-fascicular block
*Bifascicular block* → *combination of RBBB with either left anterior hemiblock or left posterior hemiblock.*
Tri fascicular block → RBBB plus either LAHB/LPHB+ first degree AV block.
Complete heart block destruction of → AV node leading to AV dissociation

## 1452. Low QRS voltage on ECG with left ventricular hypertrophy on Echocardiography suggests a diagnosis of:

a) Pericardial effusion

b) Cardiac Amyloidosis

c) Corpulmonale

d) Infective endocarditis

Correct Answer - B
Answer is B (Cardiac Amyloidosis)
*Low QRS voltage on ECG with left ventricular hypertrophy on Echocardiography suggests a diagnosis of infiltrative cardiomyopathy like amyloidosis.*
*The combination of low QRS voltage plus a thick left ventricle on echocardiogram strongly suggests the diagnosis of infiltrative cardiomyopathy like cardiac amyloidosis. The increased thickness is the amyloid. It is not muscle (not true hypertrophy), does not depolarize and therefore adds nothing to QRS voltage*

# 1453. In LVH, SV1 +RV6 is more than mm

a) 25

b) 30

c) 35

d) 45

Correct Answer - C
Ans. is 'c' i.e., 35
**Arrhythmias by Kathryn Lewis p. 219] o In LVH, SV-1 plus RV-6 is more than 15 mm.**

- To diagnose the left ventricular hypertrophy on ECG one of the following criteria should be met :?
  **The sokolow-lyon criteria is most often used -**
- R in V, or V6 + 5 in V > 35 mm in men

**The cornell-criteria has different values**

- R in aVL and S in V3 > 28 mm in men
- R in aVL and S in V3 > 20 mm in women
  **As the left ventricular wall becomes thicker QRS complexes are larger in leads V1-V6**
- S wave is deep in V,
- R wave is high in V4
- ST depression in V„-V, (strain pattern)

## 1454. Which is not a high pitched heart sound

a) Mid systolic click

b) Pericardial shudder

c) Opening snap

d) Tumor plop sound

Correct Answer - D
Ans. is 'd' i.e., Tumor plop sound
**Low pitch heart sounds are :**

- S3
- S4
- Tumor plop sound

**Mid systolic clicks are**

- Heard in mitral valve prolapse during systole and are high pitch sounds.

**The pericardial knock (PK) i**s

- Also high-pitched and occurs slightly later than the opening snap, corresponding in timing to the abrupt cessation of ventricular expansion after tricuspid valve opening and to an exaggerated y descent seen in the jugular venous waveform in patients with constrictive pericarditis.

**A tumor plop is**

- A lower-pitched sound that can be heard in patients with atrial myxoma.
- *It* may be appreciated only in certain positions and arises from the diastolic prolapse of the tumor across the mitral va*lve*

## 1455. Broad complex tachycardia, due to ventricular tachycardia is suggested by all except

a) Fusion beats

b) AV dissociation

c) Capture beats

d) Termination of tachycardia by carotid sinus massage

Correct Answer - D

Ans. is `d' i.e., Termination of tachycardia by carotid sinus massage

**Supports Ventricular tachycardia**

| | |
|---|---|
| QRS duration | Broad complex tachycardia : QRS duration > .14ms |
| *QRS pattern* | QRS pattern does not resemble mimic typical LBBS or RBBB |
| **P wave** | P and QRS rate and rhythm linked to suggest atrial activation |
| **QRS morphology** | Monophasic or biphasic complexes |
| **Fusion beat** | Present |
| **Capture beat** | Present |
| **AV dissociation** | Present |
| **Vagal maneuveres** | No effect of vagal maneuveres |

## 1456. Which of the following arrhythmia is most commonly associated with alcohol binge in the alcoholics

a) Ventricular fibrillations

b) Ventricular premature contractions

c) Atrial flutter

d) Atrial fibrilation

Correct Answer - D
Ans. is 'd' i.e., Atrial fibrilation
**When ever the pulse is irregularly irregular atrial fibrillation is almost always the diagnosis.**

- Arrythmia occuring after a drinking binge is k/a Holiday heart syndrome**.**

**Arrythmias known to follow drinking Binge in order of frequency**

- *Atrial fibrillation (MC)*
- *Atrial flutter*
- *Ventricular premature Contractions*

**Also know**

- *T*he most common cardiac effect of chronic drinking is Dilated Cardiomyopathy

## 1457. Treatment of asymptomatic bradycardia is

a) No treatment is required

b) Give atropine

c) Isoprenaline

d) Cardiac pacing

Correct Answer - A

Ans. is 'a' i.e., No treatment is required

- *The normal heart rate has been considered historically to range from* 60 *to 100 beats per minute, with sinus bradycardia being defined as a sinus rhythm with a rate below* 60 *beats per minute.*
- ***Treatment is not indicated in asymptomatic patients with sinus bradycardia.***

n *Pharmacologic therapy may be important in an acute myocardial infarction when the SA node is depressed by excessive parasympathomimetic activity or possibly ischemia. Treatment is indicated when Sinus bradycardia results in hemodynamic compromise.*

## 1458. WPW syndrome is caused by

a) Bundle Branch Block

b) Right sided accessory pathway

c) Ectopic pacemaker in atrium

d) Left budle Branch block

Correct Answer - B
Ans. is 'b' i.e., Right sided accessory pathway
**Anatomy (Location ofAccessory pathway) in W.R W syndrome**

- Electrophysiological studies and mapping have shown that accessory. Atrioventricular pathways may be located anywhere along the A-V rign or groove in the septum.
- The most frequent locations are : -
- Left lateral (50%), posteroseptal (30%) right anteroseptal (10%).
- Right lateral (10%).
- Preexcitation resulting from left sided accessory is called type A preexcitation.
- Preexcitation resulting from right sided accessory pathway is called type B preexcitation.

## 1459. Canon 'a' wave is seen in

a) Junctional rhythm

b) Atrial fibrillation

c) Atrial flutter

d) Ventricular fibrillation

Correct Answer - A
Ans. is 'a' i.e., Junctional rhythm
***Regularly –>*** *During junctional rhythm*
• ***Irregularly*** ***A-*** *V dissociation with ventricular tachycardia* complete heart block.

## 1460. Which of the following is not seen in Secondary Adrenal insufficiency

a) Pigmentation

b) Postural hypotension

c) Hypoglycemia

d) Lassitude

Correct Answer - A

- Secondary adrenal insufficiency is adrenal hypofunction due to a lack of adrenocorticotropic hormone (ACTH).

Secondary adrenal insufficiency may occur in

- Panhypopituitarism
- Isolated failure of adrenocorticotropic hormone (ACTH) production
- Patients receiving corticosteroids (by any route, including high doses of inhaled, intra-articular, or topical corticosteroids)
- Patients who have stopped taking corticosteroids

Symptoms are the same as for Addison disease and include fatigue, weakness, weight loss, nausea, vomiting, and diarrhea, but there is usually less hypovolemia.

## 1461. Which of the following is not expected in a case of Microcytic Hypochromic Anemia:

a) Reduced serum Iron

b) Reduced Total RBC distribution Width

c) Normal Ferritin levels

d) Increased TIBC

Correct Answer - B

**Answer** *is* **B (Reduced Total RBC distribution width**

*Microcytic Hypochromic Anemias are typically associated with a Normal or High Red Cell Distribution Width*

| Condition<br>Test (normal values) | Iron deficiency | Thalassemia | Sideroblastic anemia | Anemia of chron disease |
|---|---|---|---|---|
| Smear Microcytic (MCV<80) | Microcytic hypochromic | Microcytic hypochromic | Microcytic hypochromic | Normocytic normochromic > Micro/hypochrom (but Micro/Hypo may be present |
| Serum iron (50-150n/d1) | Low (<30) | Normal | Normal | .1. (<50) |
| TIBC (300-360 µg/dl) | High (>360) | Normal | Normal (Chandrasoma Taylor) | ,i, (<300) |

| | | | | |
|---|---|---|---|---|
| % Saturation **(30-50%)** | < 10 (J') | N or Ted **(30-80)** | N or "l' **(30-80)** | 4, **(10-20)** |
| Ferritin (R/1) **(50-200 µg/L)** | < 15 (f$^{ed}$) | T **(50-300)** | T (50-300) | Normal or T **(30-200)** |
| Hemoglobin pattern | Normal | Abnormal | Normal | Normal |
| Free Erythrocyte Protporphrin | Ted | Normal | Ted | Ted |
| RDW | Ted | Normal | Normal | Normal |

**1462. On medical check up of a Punjabi student following findings were seen Hb of 9.9gm/d1, RBC count of 5.1 million, MCV of 62.5 fl and RDW of 13.51%. What is the most probable diagnosis ?**

a) HbD

b) Thalassemia trait

c) Iron deficiency anemia

d) Anemia of chronic disease

Correct Answer - B

**Answer- B. Thalassemia trait**

**Normal RDW with low MCV is seen in--**

1. Anemia of chronic disease
2. Heterozygous thalassemia (Thalassemia trait)
3. Hemoglobin E trait.

## 1463. Megaloblastic anemia should be treated with both folic acid vitamin $B_{12}$ because :

a) Folic acid alone causes improvement of hematologic symptoms but worsening of neurological symptoms

b) It is a Co factor

c) It is enzyme

d) None of the above

Correct Answer - A

Answer is A (Folic acid alone causes improvement in hematologic in symptoms but worsening of neurological symptoms)

*Megaloblastic anemia may be caused by a deficiency of vitamin B12 (cobalamine) or deficiency of folate. Unless it is clearly established, which of the two deficienceis / folate or cobalamine) is the cause anemia treatment should include administration of both folk acid and vitamin Bp. If only folic acid is administered in a patient with mezaloblastic anemia due to vitamin BI2 deficiency, worseninz of neurological symptoms (cobalamine neuropathy) is seen despite an improvement in the hematological .symptoms (anemia)*

*'Although prompt hematologic response heralded by reticulocytosis follows the administration of folic acid, it should he cautioned that the hematologic symptoms of a vitamin* $B_{,2}$ *deficiency anemia also respond to folate therapy. However Mate does not prevent and may even exacerbate the progression of neurological deficits typical of vitamin* $B_{12}$ *deficiency states'*

*Before large doses of folic acid are given, cobalamine deficiency*

*must be excluded and if present corrected, otherwise cobalamine neuropathy may develop despite a response of the anemia of cobalamine deficiency to Palate therapy.*

## 1464. Which of the following statements regarding the schilling test for vitamin $B_{12}$ malabsorption is most accurate?

a) The schilling test results are abnormal in patients with dietary vitamin $B_{12}$ deficiency.

b) In patients with pernicious anemia, the results of the schilling test normalize after oral administration of intrinsic factor,

c) In patients with ileal disease, the results of the schilling test normalize after oral administration of intrinsic factor

d) Pancreatic exocrine insufficiency does not cause schilling test results to be abnormal.

Correct Answer - B
Answer is B (In patients with pernicious anemia, the results of the Schilling test normalize after oral administration of intrinsic factor):
*An abnormal Schilling's test that corrects or normalizes after administration of intrinsic factor suggests a diagnosis of Pernicious Anemia (Intrinsic Factor Deficiency).*
*Shilling's test is done to determine the cause of cyanocobalamine deficiency (Vitamin $B_{12}$).Schilling test is*
*abnormal in conditions that affect cobalamine absorption including Pernicious anemia, Chronic Pancreatitis, Bacterial overgrowth syndrome and Ileal dysfunction.*

- *An Abnormal Schilling's test that corrects after administration of Intrinsic Factor indicates Pernicious Anemia*
- *An Abnormal Schilling's test that corrects after administration of Pancreatic Enzymes suggests Exocrine Pancreatic Insufficiency (from Chronic Pancreatitis)*

- *An Abnormal Schilling's test that corrects after administration of five days of antibiotics suggests Bacterial Overgrowth Syndrome*
- *An Abnormal Schilling's test that does not correct after administration of intrinsic factor, pancreatic enzymes and/or antibiotics suggests Ileal mucosal dysfunction*

## 1465. Mentzer index more than 13 suggests a diagnosis of

a) Iron deficiency anemia

b) Thalassemia

c) Hereditary Spherocytosis

d) Autoimmune Hemolytic Anemia

Correct Answer - A
Ans. is 'a' i.e., Iron deficiency Anemia

- *Mentzer index more than 13 suggests a diagnosis of Iron-deficiency anemia.*

**Mentzer index**

- The Mentzer index is used to help in differentiating iron deficiency anemia from beta thalassemia.
- The index is calculated as the quotient of the mean corpuscular volume (MCV, in fL) divided by the red blood cell count (RBC, in millions per microleter).
- If the Mentzer index is less than 13, thallassemia is said to be more likely.
- If the Mentzer Index is greater than 13, Then iron-deficiency anemia is said to be more likely.

**Principle**

- In iron deficiency, the marrow cannot produce as many RBCs and they are small (imcrocytic), so the RBC count and the MCV will both be low, and as a result, the index will be greater than 13. Conversely, in thalassemia, which is a disorder of globin synthesis, the number of RBCs produced is normal, but the cells are smaller and more fragile. Therefore, the RBC count is normal, but the MCV is low, so the index will be less than 13.

- In practice, the Mentzer index is not a reliable indicator and should not, by itself be used to differentiate the two conditions.

| Index | Formula | Value for iron deficiency anemia | Value for iron thalassemia |
|---|---|---|---|
| Mentzer index | MC V/RBC count | > 13 | < 13 |
| Shine and Lal index | MCV2 x MCH x 0.01 | > 1530 | < 1530 |
| England and Fraser index | MCV – RBC - (5 x Hb) 5.19 | > 0 | < 0 |
| Srivastava index | MCH/RBC | > 3.8 | < 3.8 |
| Green and king index | MCV2 x RDW x Hb/100 | > 65 | < 65 |
| Red cell distribution width index | MCV x RDW/RBC | > 220 | < 220 |

## 1466. Which of the following statements about iron deficiency anemia is correct

a) Decreased TIBC

b) Increased ferritin levels

c) Bone marrow iron is decreased after serum iron is decreased

d) Bone marrow iron is decreased earlier than serum iron

Correct Answer - D
Ans. is 'D' i.e., Bone marrow iron is decreased earlier than serum iron
"In iron deficiency anemia the first change is decrease in iron stores "
The decrease in iron stores is demonstrated by decreased serum ferritin level.
Remember,
*Serum ferritin reflects the amount of storage iron in the body.*
**As the total body iron level begins to fall a characteristic, sequence of events ensue :**

- First Stage or Prelatent Stage of Iron Depletion
- When iron loss exceeds absorption, a negative iron balance exists.
- *Stored iron begins to be, mobilized from stores. The iron present in the macrophages of liver, spleen and bone marrow are depleted*
- Decrease in stored iron is reflected by decrease in serum ferritin.
- At this stage all other parameters of iron status are normal.

**Second Stage or Stage of Latent Iron Deficiency :**

- Iron stores are exhausted but the *blood hemoglobin level remains higher* than the lower limit of normal. o After the exhaustion of iron stores :
- *The plasma iron concentration fallsQ.*

- *Plasma iron binding capacity increases2.*
- Percentage saturation falls below 15%Q.
- *The percentage of sideroblast decreases in the bone marrowQ.*

**Third Stage or Stage of Apparent Iron Deficiency Anemia**

- Supply of iron to marrow becomes inadequate for normal hemoglobin production,
- *So the blood hemoglobin concentration falls*$^{Q}$ *below the lower limit of normal and iron deficiency anemia is apparent.*

## 1467. Direct Coomb's test detects:

a) Antibodies attached to RBC Surface

b) Antibodies in the serum

c) Antigens attached to RBC Surface

d) Antigens in the serum

Correct Answer - A
Answer is A (Antibodies attached to RBC Surface)
*Direct Coomb's test detects IgG Antibodies (or complements) attached to the surface of RBCs. Indirect Coomb's test detects IgG antibodies in the serum (e.g. Anti-D Antibodies).*

## 1468. All of following cause intravascular hemolysis, except

a) Mismatched blood transfusion

b) Paroxysmal cold hemoglobinuria

c) Thermal burns

d) Hereditary spherocytosis

Correct Answer - D
Ans. is 'd' i.e., Hereditary spherocytosis

- Blood transfusion
- ABO mismatched transfusion
- Infected blood
- Thermal burns
- Snake bites
- Sepsis
- Bacterial/parasitic infections
- Clostridial sepsis
- Malaria
- Bartonellosis
- Mycoplasma pneumoniae
- Mechanical heart valves
- Paroxysmal hemoglobinuria
- PNH
- PCH

## 1469. Which of the following is not seen in Hereditary Spherocytosis

a) Direct Coomb's Positive

b) Increased Osmotic Fragility

c) Splenomegaly

d) Gall stones

Correct Answer - A
Ans. is 'a' i.e., Direct Coomb's positive
**Hereditary Spherocytosis**

- Membrane cytoskeleton that lies closely opposed to the internal surface of the plasma membrane, is responsible for elasticity and maintenance of RBC shape.

**Membrane skeleton consists *:?***

Spectrin → The chief protein component responsible for biconcave shape.
Ankyrin and band 4-2 → Binds spectrin to band 3
Band 3 → A transmembrane ion transport protein.
Band 4·1 → Binds spectrin to glycophorin A, atransmembrane protein.

- Hereditary spherocytosis is an autosomal dominant disorder characterized by intrinsic defects in red cell membrane. This results in production of red cells that are sphere (spherocytes) rather than biconcave.
- The mutation *most commonly involves the gene coding for ankyrin,* followed by *Band-3 (anionic transport channel), spectrin,* and *Band 4·2 (also called palladin).*

**Also know**

**Most common, defect in hereditary elliptocytosis is in spectrin**

**Pathogensis of Hereditary spherocytosis**

- Loss of membrane cytoskeleton proteins (ankyrin, spectrin, Band 3, 4.2) results in reduced membrane stability. Reduced membrane stability leads to spontaneous loss of membrane fragments during exposure to shear stresses in the circulation. The loss of membrane relative to cytoplasm forces the cells to assume the smallest possible diameter for a given volume cells become microspherocytes.
- Because of their spheroidal shape and reduced membrane plasticity, red cells become less deformable and are trapped in to spleen as they are unable to pass through the interendothelial fenestrations of the venous sinusoids. In the splenic sinusoides, red cells are phagocytosed by RE cells Extravascular hemolysis.

**Clinical features of Hereditory spherocytosis**

The clinical features are those of extravascular hemolysis :

Anemia → Mild to moderate

Jaundice (Mainly indirect bilirubin) → Splenomegaly

Gall stones → Elevated excretion of bilirubin promotes formation of pigment stone.

Leg ulcer → Rare clinical manifestation.

Aplastic crisis → Triggered by parvo-virus infection.

**Laboratory findings**

- *S*pherocytosis --> Peripheral smear shows microspherocytes which are small RBCs without central pallor (Normally central 1/3 pallor is present in red cells).
- MCV4
- *MCHC* r
- Increased unconjugate biliru*bin*
- *Urine urobilinogen 1'*
- *Stool s*tercobilino*gen*
- *Reticulocytosis* **-4** As seen with any type of hemolytic anemia.
- *Hemoglobin 1*
- *Serum Heptoglobin* --> Nonnal to decreased.

- *Increased osmotic fragility on pink test.*
- *C*oomb's test is used to distinguish hereditary spherocytosis from autoimmune hemolytic anemias.
- Autoimmune hemolytic anemias *are coomb's positive_ whereas hereditary spherocytosis is coomb's negative.*

## 1470. Usually associated with parvovirus B19 infection in those with hereditary spherocytosis

a) Mild to moderate splenomegaly

b) Aplastic crisis

c) Gallstones

d) Hemolytic crisis

Correct Answer - B

Ans. is 'b' i.e., Aplastic crisis

- *Parvovi*rus **B19** selectively infects erythroid precursors and is the most common aetiological agent that induces
- aplastic crisis in pati*ents with hereditary spherocytosis (and other Hemolytic disorders).*

**Transient aplastic crisis**

- Persons with decreased erythrocytes caused by conditions such as iron deficiency anemia, human immunodeficiency virus sickle cell disease, spherocytosis or thalassemia are at risk of transient aplastic crisis if infected with parvovirus B19.
- The virus causes a cessation of erythrocyte production.
- Parvovirus infection may be the first manifestation in HS.
- It begins with reticulocytosis and thrombocytosis

## 1471. With regards to hereditary spherocytosis, which of the following is false

a) Usually has autosomal dominant inheritance

b) Caused by mutations in genes for proteins such as spectrin, ankrin or band 3

c) Red blood cells are destroyed in the spleen

d) Aplastic crises are common

Correct Answer - D

Ans. is 'd' i.e., Aplastic Crisis are common

**Aplastic crisis are a rare/uncommon complication of Hereditary Spherocytosis typically caused by virally induced bone marrow suppression.**

- T*he most common aetiological agent that induces Aplastic Crisis in patients with Hereditary Spherocytosis is Parvovirus B19*

**Hereditary spherocvtosis usually has autosomal dominant inheritance caused by mutation in genes for proteins such as spectrin. ankrin or band 3.**

- The genes responsible for HS include akyrin, b spectrin, band-3-protein, a-spectrin, and protein 4.2. In approximately two-thirds to three-quarter of HS patients, inheritance is autosomal dominant. In the remaining patients, inheritance is non-dominant due to autosomal recessive inheritance of a de novo mutation.

**In patients with hereditary spherocvtosis Red blood cells are destroyed in the spleen**

- *The spleen plays a critical role in the pathobiology of HS, as destruction of spherocytes in the spleen is the primary cause of*

*hemolysis in HS patients.*

**Aplastic Crisis is an Uncommon Complication**

- Aplastic crisis following virally induced bone marrow suppression are uncommon, but may result in severe anaemia with serious complications including congestive heart failure or even death.
- The most common aetiological agent in these cases is parvovirus B19.
- Parvovirus selectively infects erythropoietic progenitor cells and inhibits their growth

## 1472. All of the following are true regarding splenectomy in patients with hereditary spherocytosis, except ?

a) Avoid in mild cases

b) Delay splenectomy until at least 4 years old age

c) Anti-pneumococcal vaccination must be given before splenectomy

d) Prolonged anti-pneumococcal antibiotic prophylaxis must be given after splenectomy

Correct Answer - D

Ans. is 'd' i.e., Prolonged Anti-pneumococcal Antibiotic Prophylaxis must be given after splenectomy

**Splencectomv in patients with Hereditary spherocytosis**

- Avoid splenectomy in mild cases.
- Delay splenectomy until at least 4 years of age after the risk of severe sepsis has peaked.
- Anti-pneumococcal v*accination befoe splenectomy is imperative while anti-pneumococcal prophylaxis post-splenectomy is controversial.*

## 1473. Most common heavy chain disease is

a) Franklin disease

b) Seligmann disease

c) Mu heavy chain disease

d) Waldenstrom cryoglobulinemia

Correct Answer - B
**Ans. is 'b' i.e., Seligmann Disease (Alpha heavy chain disease)**
**There are four forms:**
* Alpha chain disease (Seligmann's disease)- most common type
* Gamma chain disease (Franklin's disease)
* Mu chain disease
* Delta chain disease

**1474.** **Leukoerythroblastic picture may be seen in all of the following conditions, except:**

a) Myelofibrosis

b) Metastatic carcinoma

c) Gaucher's disease

d) Thalassemia

Correct Answer - D

*Leukoerythroblastosis* refers to the presence of immature nucleated RBCs, immature white blood cells, and megakaryocyte fragments on the peripheral blood smear. It occur due to bone marrow infiltration.

**When marrow infiltration causes anemia or pancytopenia, it is referred to as myelophthisic anemia.** The most common cause of myelophthisis includes metastatic carcinoma of the lung, breast, or prostate. Other causes include hematologic malignancies (leukemia, lymphoma), infections (tuberculosis, fungi), and metabolic diseases (Gaucher disease, Niemann-Pick disease). *Thalassemia is not associated with leukoerythroblastosis.*

**Ref:** CURRENT Diagnosis & Treatment in Family Medicine, 3rd Edition, Chapter 31

## 1475. Chronic Non-Spherocytic hemolytic anemia is seen in which class of G6PD deficiency

a) Class I

b) Class II

c) Class III

d) Class IV

Correct Answer - A
Ans. is 'a' i.e., Class I
**<u>The four forms of symptomatic G6PD deficiency</u> :**

- Acute hemolytic anemia
- Favism
- Congenital nonspherocytic hemolytic anemia
- Neonatal hyperbilirubinemia

**<u>Congenital nonspherocvtic hemolytic anemia</u>**

- Patients with class I G6PD variants have such severe G6PD deficiency that lifelong hemolysis occurs in the absence of infection or drug exposure.
- Such patients fall under the category of having congenital nonspherocvtic hemolytic anemia.
- These G6PD variants have low in vitro activity and/or marked instability of the molecule, and most have DNA mutations at the glucose-6-phosphate or NADP binding sites.
- *These sites are central to the function of G6PD, which oxidizes glucose-6-phosphate and reduces NADP to NADPH. It is presumed that the functional defect is so severe that the red cells cannot withstand even the normal oxidative stresses encountered in the*

*circulation.*

- *Anemia and jaundice are often first noted in the newborn period, and the degree of hyperbilirubinemia is frequently of sufficient severity to require exchange transfusion.*
- *After infancy, hemolytic manifestations are subtle and inconstant. Most individuals have mild to moderate anemia (hemoglobin 8 to 10 g/dL) with a reticulocyte count of 10 to 15 percent. Pallor is uncommon, scleral icterus is intermittent, splenomegaly is rare, and splenectomy generally is of little benefit.*
- *Hem*olysis can be exaggerated by exposure to drugs or chemicals with oxidant potential or exposure to fava beans.
- Some drugs with relatively mild oxidant potential that are safe in patients with class II or class III G6PD variants may increase hemolysis in patients with class I variants.

**Disease variants of Glucose 6 phosphate dehvdrogenase deficiency**

- *T*he World Health Organization has classified the different G6PD variants according to the magnitude of the enzyme deficiency and the severity of hemolysis. Classes **IV** and V are of no clinical significance.

| Types | Features |
|---|---|
| *Class I* | *Variants have severe enzyme deficiency (less than 10* percent *of normal) and have chronic (nonspherocytic) hemolytic anemia.* |
| *Class II* | *Variants, such as G6PD Mediterranean, also have severe enzyme deficiency, but there are, usually only intermittent episodes of acute hemolysis associated with infection, drugs, or chemicals.* |
| *Class* | *Variants, such as G6PD A-, have moderate enzyme deficiency (10 to 60 percent of normal) with intermittent* |

| | |
|---|---|
| *III* | *episodes of acute hemolysis usually associated with infection, drugs, or chemicals* |
| *Class IV* | *Variants have no enzyme.deficiency or hemolysis.* |
| *Class V* | *Variants have increased enzyme activity* |

**1476.** **Sickle cell anemia leads to resistance towards?**

a) P. falciparum

b) P. ovale

c) P. malariae

d) P. vivax

Correct Answer - A

Individuals with sickle cell trait (hemoglobin genotype AS) are resistant to the lethal effects of **Plasmodium falciparum** infection.
This is because the sickle cell traits prevents the development of high parasitemia, probably partly as a result of parasitized red cells sickling in the circulation and being removed by the spleen before they can develop into schizonts.
*Absence of RBC Duffy antigen confers resistance to P. Vivax.*

**Ref:** Harrison's 17th ed chapter 213 ; Essentials of clinical immunology by Helen Chapel, Man;e. Haeney, Siraj Misbah, 5th edition, Page 48 ; Lecture Notes: Tropical Medicine edited by G. V. Gill, Nick Beeching, 2011, Page 62.

## 1477. Which of the following is a quantitative defect in globin synthesis

a) Thalassemia

b) Sickle cell hemoglobinopathy

c) G6PD deficiency

d) Diamond-Black fan syndrome

Correct Answer - A
Ans. is 'a' i.e., Thalassemia
The thalassemia syndromes are a heterogeneous group of disorders caused by inherited mutations that decrease the synthesis of either the c-globin or p-globin chains that compose adult hemoglobin, HbA (c2p2), leading to anemia, tissue hypoxia, and red cell hemolysis related to the imbalance in globin chain synthesis.

## 1478. The most important diagnositic feature for beta thalassemia trait

a) Raised HbF

b) Reduced MCH

c) Reduced MCV

d) Raised HbA2

Correct Answer - D
Ans. is 'd' i.e., Raised $HbA_2$

- *An abnormal increase in the level of $HbA_2$ is the most significant parameter in the diagnosis of beta-thalassemia carriers.* HbA-2 is constanly elevated in heterozygous carriers of [3-thalassemia in all the ethnic groups studied. The values range from 3·5 to 7%.

**<u>Investigations in thalassemia</u>**

- *Hemoglobin electrophoresis* should always be the first investigation to include/exclude the diagnosis of thalasemia. The level of normal adult hemoglobin HbA is markedly decreased with proportionate increase in HbA2 and HbF.
- X-ray skull shows *:?*
  *i) Crew-cut appearance*
  *ii) Hair on end appearance*

## 1479. Deletion of one alpha globin gene on one chromosome is best defined as

a) Hb Barts hydrops fetails

b) Alpha thalassemia major

c) Alpha thalassemia trait

d) Alpha thalassemia silent carrier

Correct Answer - D
Ans. is 'd' i.e., Alpha thalassemia silent carrier

| Condition | Defect | Genotype | Clinical syndrome |
|---|---|---|---|
| Silent Thalassemia | Deletion of 1 alpha genes | -a/aa | Normal |
| Thalessemia trait | Deletion of 2 alpha genes | -a/-a (homogygous) | Microscopic hypochromic |
| | | (heterogenous) | Blood picture but No/Minimal Anemia |
| HbH disease | Deletion of 3 alpha genes | --/-a | Hemolytic anemia |
| Hydrops fetalis (Hb Barts) | Deletion of 4 alpha genes | --/-- | Fatal in utero or at birth |

## 1480. Which of the following is caused by deletion of all four alpha globin genes

a) Beta thalassemia major

b) Hb Barts

c) HbH

d) a° thalassemia trait

Correct Answer - B
Ans. is 'b' i.e., Hb Barts

| Condition | Defect | Genotype | Clinical syndrome |
|---|---|---|---|
| Silent Thalassemia | Deletion of 1 alpha genes | -a/aa | Normal |
| Thalessemia trait | Deletion of 2 alpha genes | -a/-a (homogygous) | Microscopic hypochromic |
| | | (heterogenous) | Blood picture but No/Minimal Anemia |
| HbH disease | Deletion of 3 alpha genes | --/-a | Hemolytic anemia |
| Hydrops fetalis (Hb Barts) | Deletion of 4 alpha genes | --/-- | Fatal in utero or at birth |

## 1481. In Beta thalassemia, the most common gene mutation is

a) Intron 1 inversion

b) Intron 22

c) 619 bp deletion

d) 3.7 bp deletion

Correct Answer - A
Ans. is 'a' i.e., Intron 1 inversion

- Thalassemias are autosomal recessive disorder
- The most common mutation causing 13 thalassemias is intron/inversion

**Also know:**

Synthesis of alpha chain is controlled by 2 gene clusters on → Chromosome 16

Synthesis of beta chain is controlled by 2 gene clusters on → Chromosome 11

Thalassemia mutations in India

| **Multations** | **Frequency** |
|---|---|
| IVS1-5 (G —>C) | 48% |
| 619 bp defection | 18% |
| IVS-1 (G T) | 9% |
| FR41/42(TCTT) | 9% |
| FR8/9 (+G) | 5% |
| Codonl5 (G --> A) | 6% |
| Others | 100% |

## 1482. Which is the most common cytogenetic abnormality in adult myelodysplastic syndrome (MDS) -

a) Trisomy 8

b) 20q?

c) 5q?

d) Monosmy 7

Correct Answer - C

**Answer is C (5q-)**

`*Monosomy 7 is by far the most common cytogenetic abnormality in children (pediatric MDS) whereas 5q-* ***is*** *observed most frequent!,' in adults' – Myelodysplastic Syndromes by John Bennett (2002)/300*

Cytogenetic Abnormalities in MDS: Facts to Remember

*Monosomy 7 is the most frequent cytogenetic abnormality in children.Q Deletion 5q (5q) is the most frequent cytogenetic abnormality in adults Q. Trisomy 8 is the most frequent tri.somyQ.*

**Differences between Myelodysplastic Syndromes in children and Adults** (`Myelodysplastic Syndromes' 2002/300; 'Childhood Leukemias' 2'"/549)

| **Feature** | **Adults** | **Children** |
|---|---|---|
| • Frequency | Less common | More common |
| • Presence of sideroblasts | Uncommon (<2%) | More common (,--25%) |
| • Cytogenetic Abervations | | |
| -7/7q- | Most common | Less common |

| | | |
|---|---|---|
| | (r,30%) | (,=-40%) |
| -5/5q- | Uncommon (--L-1-2%) | Most common (z20%) |

## 1483. Reversed Coarctation is seen in:

a) Giant cell Arteritis

b) Polyarteritis Nodosa

c) Takayasu Arteritis

d) Kawasaki Disease

Correct Answer - C
Answer is C (Takayasu Arteritis):
*Takayasu arteritis is also known as 'Reversed Coarctation'.*

| **Condition** | **Coarctation of Aorta** | **Takayasu Arteritis (Reversed Coarctation)** |
|---|---|---|
| *Pathology (Site of Obstruction)* | *Obstruction is most commonly found just distal to the origin of the left Subclavian artery thereby sparing the upper limb vessels* | *Obstruction is most commonly seen in proximal aspect of branches of the aortic arch including the Subclavian and Common Carotid thereby affecting the upper limb vessels* |
| *Pulses* | *Absence or diminished pulse in the lower limbs* | *Absence or diminished pulse in the upper limbs* |
| *Blood Pressure* | *Increased blood pressure in the upper limbs* | *Decreased blood pressure in the upper limbs* |

## 1484. Most common variant of Takayasu Disease in India is:

a) Type-1

b) Type-2

c) Type-3

d) Type-4

Correct Answer - C

Answer is C (Type -3):

*The most common type of Takayasu arteritis reported in India is Type III.*

*Most studies from India have reported Type III as the most common form of Takayasu arteritis in India accounting for 53 to 76 percent of cases.*

| **Classification / Type** | **Predominant Site Involved** |
|---|---|
| Type-I *(Shimizu-Savo)* | *Arch of aorta and its branches* |
| Type-II *(Kimoto)* | *Thoraco-abdominal aorta and its branches without involvement of the aortic arch* |
| Type-III *(Inada)* | *Combined features of both Type-I & Type-II* |
| Type-IV *(Oata)* | *Pulmonary involvement (in addition to features of Type-I, II or III)*<br>*Involvement of coronary arteries (in addition to features of Type-1, II or III)* |

## 1485. In Takayasu's arteritis there is

a) Intimal fibrosis

b) Renal hypertension

c) Coronary aneurysm

d) All of the above

Correct Answer - B
Ans. is `b' i.e., Renal hypertension

| Artery | Potential clinical manifestation |
|---|---|
| Subclavian | Arm claudication, Raynaud's phenomenon |
| Commoncarotid | Visual changes, syncope transient, ischaemic attacks stroke |
| AbdominalAorta | Abdominal pain, nausea vomiting |
| Renal | Hypertension, renal failure, aortic insufficiency, congestive |

| | |
|---|---|
| | heart failure |
| Vertebral | Visual changes, dizziness |
| Coeliac axis | Abdominal pain, nausea vomiting |
| Iliac Leg claudication | |
| Pulmonary | Atypical chest pain dyspnea |
| Coronary | Chest pain myocardial infarction |

## 1486. Marker of acute kidney injury all except

a) Clusterin

b) Osteopontin

c) Alanine aminopeptidase

d) Acid phosphatase

Correct Answer - D
Ans. is 'd' i.e., Acid phosphatase
*Alanine aminopeptidase (AAP)* *Kidney injury molecule-1 (KIM-1)*
*Alkaline phosphatase (AP)* *Clusterin*
utathione-S-transferase (a-GST) *Neutrophil gelatinase associated lipocalin (NGAL)*
yglutamyl transpeptidase (TGT) *Interleukin-18 (IL-18)*
*N-acetyl-0-glucosaminidase (NAG)* *Cysteine-rich protein (CYR-61)*
*2-microglobulin* *Osteopontin (OPN)*
*microglobulin* o *Retinol-binding protein (RBP)* *Fatty acid binding protein (FABP*
*Cystatin C* *Sodium/hydrogen exchanger isoform (NHE3) o*
*Microalbumin* *Exosomal fetuin-A*

## 1487. Lepsroy causes ?

a) Membranous GN

b) Focal glomerulosclerosis

c) Membranoproliferative GN

d) Mesangioproliferative GN

Correct Answer - A
Ans. is 'a' i.e., Membranous GN
**Infectious diseases causing membranous GN**

- Hepatitis B and C
- Hydatid disease
- Leprosy
- Filariasis
- Syphilis
- Enterococcal
- Malaria
- Endocarditis
- Schistosomiasis

## 1488. Nephrotic syndrome is the hall mark of the following primary kidney diseases except

a) Membranous Glomerulopathy

b) IgA nephropathy

c) Minimal change disease

d) Focal segmental Glomerulosclerosis

Correct Answer - B

Ans. is 'b' i.e., IgA nephropathy

- Most common presentation of IgA nephropathy is grass hematuria.
- It is the most common form of glomerulonephritis worldwide

**Causes of Nephrotic syndrome**

- Minimal change disease
- *Focal segmental glomerulosclerosis* o *Membranous glomerulonephritis* o *Diabetes nephropathy*
- AL and AA amyloidosis
- Light chain deposition disease
- Fibrillary immunotactoid disease

## 1489. The term end-stage renal disease (ESRD) is considered appropriate when GFR falls to

a) 50% of normal

b) 25% of normal

c) 10-25% of normal

d) 5-10% of normal

Correct Answer - D
Ans. is 'd' i.e., 5-10% of normal

| CKD stage | GFR (ml/min/1.73m$^2$) | Description |
|---|---|---|
| 1 | >90 | Normal renal function but other evidence of organ damage* |
| 2 | 60-89 | Mild reduction in renal function with other evidence of organ damage* |
| 3 | 30-59 | Moderately reduced GFR |
| 4 | 15-29 | Severely reduced GFR |
| 5 | <15 | End stage, or approaching, end stage renal failure |

# 1490. Characteristic ECG finding of pulmonary embolism

a) Sinus tachycardia

b) S Q3T3

c) T wave inversion

d) Epsilon waves

Correct Answer - B

Ans. is `b' i.e., $S_JQ_3T_3$

**E.C.G. changes of pulmonary embolism *?***

- Sinus tachycardia is the most frequent and nonspecific finding on electrocardiography in acute pulmonary embolism.
- Features suggesting acute right heart strain on the ECG occur relatively infrequently, these include.
- Acute right axis deviation
- P pulmonale
- Right bundle branch block
- Inverted T waves
- ST segment changes in right sided leads.
- Earlier the following E.C.G. changes were considered highly predictive of acute pulmonary embolism, but these observations were found in less than 12% of patients with pulmonary emboli in recent studies. These E.C.G. features are -
- S wave in lead I
- *Q wave in lead III*
- *Inverted Tin lead III* ("S1Q31.3")
- *S waves in lead I, II and III* ("$S_i$,$S_2$ S3")

**Also know**

**Areterial blood gas analysis in pulmonary embolism :**

- *Ar*terial blood gas analysis shows
- Mid to moderate hypoxemia
- Increased P (A - a) 0,
- Mildly reduced PaCO2
- Almost all patients with pulmonary embolism have PaO, < 80 mm Hg but no absolute level of $Pa0_2$ can be used to exclude the diagnosis.

## 1491. Pleural effusion in rheumatoid arthritis is typically associated with the following features except

a) Glucose > 60 mg/dl

b) Protein > 3 gm/di

c) Pleural fluid protien to serum protein ratio of >0 .5

d) Pleural fluid LDH to serum LDH ratio of >0.6

Correct Answer - A
Ans. is 'a' i.e., Glucose > 60 mg/dl
**Causes of low glucose pleural fluid**

- Malignancy
- Rheumatoid arthritis
- Empyema
- Hemothorax
- Paragonimiasis
- Churg strauss syndrome
- Lupus pleuritis (occasionally)

## 1492. Bowel punctured during laproscopy

a) Trocar kept

b) trocar removal

c) trocar repositioned

d) None

Correct Answer - A
**Answer- A. Trocar kept**
To assist in identifying the precise site of injuty.

## 1493. What is not done in case of puncture wound of left colon

a) Primary suture

b) Hemicolectomy

c) Externalization

d) Resection and anastomosis

Correct Answer - B
**Answer- B. Hemicolectomy**
Small wound are repaired primarily by simple suturing.
More extensive wound are treated by resection and anastomosis.
Some may require colostomy (externalization)
[Ref Bailey er Love 25th/e p. 1184]

## 1494. What is the percentage body surface area involved in head + face in burns

a) 13

b) 15

c) 17

d) 09

Correct Answer - D

**Answer- D. 09**

**According to rule of 9 (Wallace's formula), burn surface area is calculated as :**

1. 9% for the head and neck.
2. 9% for each upper limb.
3. 9% for the front of each lower limb.
4. 9% for the back of each lower limb.
5. 9% for the front of the chest.
6. 9% for the back of the chest.
7. 9% for the front of the abdomen.
8. 9% for the back of the abdomen.
9. 1% for the genitalia.

[Ref Bailey & Love 25th le p. 381]

## 1495. Burst abdomen most commonly occurs on the

a) 2nd day

b) 3rd day

c) 7th day

d) 9th day

Correct Answer - C

Ans. is 'c' i.e., 7" day

- *Burst abdomen occurs mostly between the 7" and 10$^{th}$ day after operation (but may occur anytime after surgery from 1 to more than 20 days)(ref Sabiston 18/e )*

## 1496. Plunging Ranula is

a) Cystic growth of sublingual gland

b) Lymph node

c) A tumor in floor of mouth

d) None

Correct Answer - A

**Answer- A. Cystic growth of the sublingual gland**

- Plunging ranula is a rare form of mucous retention cyst that arises from the sublingual salivary glands.
- Mucus collects below the gland and perforates through the mylohyoid muscle diaphragm to enter the neck.

## 1497. Sialolithiasis is most commonly seen in which gland

a) Parotid

b) Sublingual

c) Submandibular

d) Minor salivary gland

Correct Answer - C
**Answer- C. Submandibular**
Most common site for salivary gland stone (Sialolithiasis) is submandibular gland, especially duct of submandibular gland (Wharton's duct).

## 1498. Which structure is not preserved in modified radical mastectomy

a) Cephalic vein

b) Pectoralis minor

c) Pectoralis major

d) Branches of lntercostobrachial N.

Correct Answer - A

**Answer- A**

In the modified radical mastectomy, the procedure involves removal of the breast but preservation of the pectoralis major muscle. The extent of preservation of the pectoralis minor and axillary nodes varies.

Preserve thoracodorsal nerve/vessels.

## 1499. Duputyrens and peyonies are both type of

a) Fibromatosis

b) Fibroblastic hyperplesia

c) Burn contracture

d) Myalgias

Correct Answer - B
**Answer- B. Fibroblastic hyperplesia**
Dupuytren contracture and Peyranie's diseases are fibroblastic hyperplasia.
Dupuytren's contracture is characterized in the established phase by flexion contracture of one or more fingers from thickening and shortening of palmar oponeurosis.

## 1500. Mid gut Volvulus symptoms appear at

a) 1" week

b) 3rd weeks

c) 2" weeks

d) 4th weeks

Correct Answer - A
**Answer- A. 1" week**
Midgut volvulus can happen at any age, but most commonly occurs during the first few weeks of life. Bilious emesis is usually the first sign of volvulus.

## 1501. Orchidopexy for incompletely descended testis is done after the age of:
***September* 2011**

a) At birth

b) 1 year

c) 2 years

d) 5 years

Correct Answer - B
Ans. B: 1 year
Orchidopexy is usually performed after the age of 1 year to avoid the risk of operating on a tiny patient Remember:
Incomplete descent of testes may increased liability to malignant change
All types of malignant testicular tumours are more common in incompletely descended testes even if they have been brought down surgically

## 1502. Which of the following statement about Renal Cell Carcinoma (Hypemephroma) is false:

a) Originate in the cortex

b) Histologically are usually Adenocarcinomas

c) May present with varicocele

d) Radiosensitive

Correct Answer - D
Answer is D (Radiosensitive):
*Renal cell carcinoma is a relatively radioresistant tumor.*
**Renal cell carcinoma originates in the Renal cortex**
*`Renal cell carcinoma originates in the Renal cortex and tends to grow out into perinephric tissue causing the typical bulge or mass effect that aids in their detection by diagnostic imaging studies' – Smith's Urology*
**Renal Cell carcinoma are adenocarcinomas**
*Histologically Renal cell carcinoma is most often a mixed adenocarcinoma — Smith's Urology*
**Renal cell carcinomas may present with varicocele**
'Renal cell carcinomas may present with Rapidly developing varicocele. Varicocele is usually observed on the left side. This occurs because left gonadal vein is obstructed where it joins the left renal vein.
**Renal cell carcinomas are Relatively Radioresistant tumors**
Renal cell carcinomas are generally considered radioresistant tumors
**Role of Radiotherapy in renal Cell carcinoma**

- *Preoperative Radiation has shown no impact on survival*
- Postoperative Radiation has also shown no evidence of improved survival but may be used as it shows improvement in local control.
- *Palliative Radiotherapy has been shown to be effective in metastatic disease to brain, bone and lungs.*

## 1503. Most common nerve damaged during hernia repair

a) ilioinguinal nerve

b) Iliohypogastric

c) Genitofumoral

d) None

Correct Answer - A

**Answer- A. ilioinguinal nerve**

- There nerves are exposed to injury during inguinal hernia repair.
1. Ilioinguinal nerve
2. Genitofemoral nerve
3. Iliohypogastric nerve
- The most commonly injured nerve is ilioinguinal nerve.

## 1504. Progressive dysphagia is seen in all except

a) CA esophagus

b) Diffuse esophageal spasm

c) Stricture

d) Achalasia cardia

Correct Answer - B

**Answer- B. Diffuse esophageal spasm**

**Propgressive dysphagis is seen in**

- CA esophagus
- Stricture
- Achalasia cardia
- Dysphagia equal for both solids and liquids from onset:

1. Achalasia
2. Diffuse esophageal spasm

## 1505. In carcinoma of anus distal margin of clearance of anal canal of at least

a) 2 cm

b) 5 cm

c) 4 cm

d) 7 cm

Correct Answer - A
Ans. is 'a' i.e., 2 cm

| MANAGEMENT OF CARCINOMA RECTUM | |
|---|---|
| Assessment of depth of penetration of perirectal nodes in rectal carcinoma | MRI |
| A punch biopsy shows carcinoma rectum with fixed mass. Chest X ray normal. Least useful investigation | Rigid proctoscope |
| *Chemotherapy for carcinoma rectum* | *5 fluorouracil, folinic acid* |
| Treatment of Choice for Ca Rectum | Surgery |
| Best procedure in mid rectal carcinoma | Anterior resection |
| Management of carcinoma near anorectal junction | Abdominoperineal resection |
| Pelvic exenteration | Brunshwing's operation |
| Management of Rectal carcinoma | Hartmann procedure |
| *Unaffected tissue margin resected in carcinoma rectum* | *1 cm* |
| Length of anal canal | 4 cm |
| Distal clearance in surgery for ca rectum | 2 cm |
| In carcinoma of anus, distal margin of clearance of anal canal of at least | 2 cm |
| 3.5 cm above anal verge | Abdominoperineal resection |
| Rectal carcinoma 5 cm from anal verge | Abdominoperineal resection |
| 7 cm above anal verge | Anterior resection |
| 6 cm from dentate line | Anterior resection |
| Treatment of Ca rectum 12 cm from anal verge | Anterior resection |
| APR is done in colorectal carcinoma on the basis of | Distance from anal verge |

*[Ref Bailey & Love 25th/e p. 1233]*

## 1506. Kher sign is seen in

a) Splenic trauma

b) Hepatic trauma

c) Renal trauma

d) Pacreatic trauma

Correct Answer - A
**Answer- A. Splenic trauma**
In splenic rupture the pain may be referred to the tip of the left shoulder.
This is known as Kehr's sign.
It occurs due to irritation of the undersurface of the diaphragm with blood and the pain is referred to the shoulder through the affected fibres of phrenic nerve (C4 and C5).

# 1507. ABPI of imminent necrosis

a) < 0.3

b) 0.3

c) < 0.6

d) > 0-6

Correct Answer - A
**Answer- A. < 0.3**
Lower ABPI is an indication of peripheral vascular disease of lower limb.
Critical ischemia (restpain or tissue necrosis) most commonly is associated with an ABI < 0.4.

## 1508. Ankle brachial pressure index is

a) 1.0

b) 10

c) 01

d) None

Correct Answer - A
**Answer- A. 1.0**
Ankle - brachial pressure index (ABPI) is the ratio of BP in ankle to BP in arm (upper limb).
Normal ABPI is around 1 (0.9 - 1.2).

**1509. In Ainhum, constriction develops usually at the level of interphalangeal joint of**

a) Great toe

b) 2nd toe

c) Little toe

d) None

Correct Answer - C

**Answer- C. Little toe**

Ainhum is bilateral painful constriction at the base of 5th toe (little toe).

This leads to bilateral autoamputation of little toes.

## 1510. Breast conservation surgery not indicated ?

a) Large pendular breast

b) SLE

c) Diffuse microcalcification

d) All

Correct Answer - D
Answer (a) Large pendular breast; (b) SLE ; (c) Diffuse microcalcification

## 1511. True about carcinoma of male breast is

a) Invasive lobular Ca is most common

b) Estrogen receptor negative

c) Seen in young males

d) BRCA2 mutation is associated with increased risk

Correct Answer - D
**Answer- D. BRCA2 mutation is associated with increased risk**
The average age of men diagnosed with breast cancer is 68 years (old age).
Breast cancers in male have estrogen receptors and high estorgen level is a risk factor for breast carcinoma in males.
Men who inherit abnormal BRCA-1 and BRCA-2 genes have an increased risk for male breast cancer.
Most breast cancers in men are ductal carcinomas.

## 1512. Most common carcinoma breast in males

a) Lobular carcinoma in situ

b) Ductal carcinoma in situ

c) Infiltrating ductal Ca

d) None

Correct Answer - C
**Answer- C. Infiltrating ductal Ca**
Most breast cancers in men are ductal carcinomas.

## 1513. Pressure in laproscopy is

a) 10-12 mmHg

b) 12-14 mmHg

c) 14-16 mmHg

d) 16-18 mmHg

Correct Answer - B
**Answer- B. 12-14 mmHg**
In laproscopy with standard pressure pneumoperitoneum, the gas pressure is 12-14 mmHg.

## 1514. Most common site of direct hernia

a) Hesselbach's triangle

b) Femoral gland

c) No site predilection

d) None

Correct Answer - A
**Answer- A. Hesselbach's triangle**
It enters the canal through inguinal triangle of Hesselbach.
Common in elderly
Always acquired
Herniation through posterior wall of the inguinal canal
Globular/round in shape; descends directly forward bulge.
Truss cannot prevent progression of  Sliding type of inguinal hernia

## 1515. Lymph drainage is increased from lower limbs by

a) Massasaging

b) Running

c) Cycling

d) Sleeping

Correct Answer - A

**Answer- A. Massasaging**

In the healthy limb, lymph flow is largely due to intrinsic lymphatic contractility, although this is augmented by exercise, limb movement and external compresion (massaging).

**Lymphatic pump/suction pump :**

1. Skeletal muscle contraction (skeletal muscle pump);
2. Squeezing action of smooth muscle lining the larger lymphatics;
3. Positive intra-abdominal and negative intrathoracic pressure.
4. Therefore, compression of tissues by objects outside the body (e.g., massage of foot) increases lymph flow.

## 1516. Nodule on thyroid with lymphadenopathy

a) Radiation

b) Chemotherapy

c) Excision of nodule

d) Total thyroidectomy + MRND

Correct Answer - D
**Answer- D. Total thyroidectomy + MRND**
Total Thyroidectomy is the treatment of choice for patients with MTC because of high incidence of multicentricity.
In patients with palpable cervical nodes or involved central neck nodes, ipsilateral or bilateral modified radical neck dissection is recommended.

## 1517. Treatment of contaminated wound of leg

a) Debridement and antibiotics

b) Hyperbaric oxygen

c) Amputation

d) None

Correct Answer - A

**Answer- A. Debridement and antibiotics**

- After debridement, wound is reassessed and further management depends on the type of wound.

1. If it is small and clean Primary closure can be done
2. If it is large and clean Coverage procedure (skin graft/muscle pedicle graft) should be done.
3. If it is still contaminated - Daily dressing and debridement is done till the wound is clean.

# 1518. Indications of Liver transplantation are All/Except

a) Biliary atresia

b) Sclerosing cholangitis

c) Hepatitis A

d) Cirrhosis

Correct Answer - C
Ans. is 'c' i.e. Hepatitis A
Liver transplantation is indicated for those children and adults, who in the absence of contraindications suffer from severe, irreversible liver disease for which alternative medical or surgical treatments have been exhausted or are unavailable.

- Most common indication
in children _____ Biliary atresia
in adults --> *Cirrhosis*

Harrison 17/e writes- *"Currently, chronic hepatitis C and alcoholic liver disease are the most common indications for liver transplantation, accounting for over 40% of all adult candidates who undergo the procedure."*

Indications for
ver Transplantation

| Children | Adults |
|---|---|
| Biliary atresia | Primary biliary cirrhosis |
| Neonatal hepatitis | Secondary biliary cirrhosis |
| Congenital hepatic fibrosis | Primary sclerosing cholangitis |
| Alagille's disease | Autoimmune hepatitis |

| | |
|---|---|
| Alagille's disease | Autoimmune hepatitis |
| Byler's disease | Caroli's disease |
| al- antitrypsin deficiency | Cryptogenic cirrhosis |
| Inherited disorders of metabolism | Chronic hepatitis with cirrhosis |
| Wilson's disease | Hepatic vein thrombosis |
| Tyrosinemia | Fulminant hepatitis |
| Glycogen storage diseases | Alcoholic cirrhosis |
| Lysosomal storage diseases | Chronic viral hepatitis |
| Protoporphyria | Primary hepatocellular malignancies |
| Crigler-Najjar disease type I | Hepatic adenomas |
| Familial hypercholesterolemia | Nonalcoholic steatohepatitis |
| Primary hyperoxaluria type I | Familial amyloid polyneuropathy |
| Hemophilia | |

Contraindications to Liver Transplantation

| Absolute | Relative |
|---|---|
| Uncontrolled extrahepatobiliary infection | Age >70 |
| Active, untreated sepsis | Prior extensive hepatobiliary surgery |
| Uncorrectable, life-limiting congenital anomalies | Portal vein thrombosis |
| Active substance or alcohol abuse | Renal failure |
| Advanced cardiopulmonary disease | Previous extrahepatic malignancy (not including nonmelanoma skin cancer) |
| Extrahepatobiliary malignancy | Severe obesity |

| | |
|---|---|
| Extrahepatobiliary malignancy (not including nonmelanoma skin cancer) | Severe obesity |
| Metastatic malignancy to the liver | Severe malnutrition/wasting |
| Cholangiocarcinoma | Medical noncompliance |
| AIDS | HIV seropositivity |
| Life-threatening systemic diseases | Intrahepatic sepsis |
| | Severe hypoxemia secondary to right-to-left intrapulmonary shunts ($P_{02}$ < 50 mmHg) |
| | Severe pulmonary hypertension (mean PA pressure >35 mmHg) |
| | Uncontrolled psychiatric disorder |

## 1519. Cock's peculiar tumor is

a) Basal cell CA

b) Squamous cell CA

c) Ulcerated sebaceous cyst

d) Cylindroma

Correct Answer - C
Ulcerated sebaceous cyst *[Ref. Love & Bailey 23/e page 173, 595; Das text book of Surgery3/e p81] Repeat from May 04*

- Cock's peculiar tumour is a sebaceous cyst linked growth that can resemble a squamous cell carcinoma.
The proliferating cyst is usually solitary, but it often arises from a simple trichilemmal cysts in the hair follicle epithelium.

## 1520. Most important diagnostic feature of congenital hypertrophic pyloric stenosis

a) Metabolic alkalosis

b) Non bilious vomiting

c) Jaundice

d) Fever

Correct Answer - B
**Answer- B. Non bilious vomiting**
metabolik alkalosis also occurs, non-bilious vomiting is the most important feature of CHPS.

## 1521. Criteria for viability of muscle are all except

a) Colour

b) Intact fascia

c) Contractability

d) Bleeding when cut

Correct Answer - B
**Answer- B. Intact fascia**
**Non viable muscle can be identified by 4cs -**

- Color ? Consistency
- Contraction, and ? Circulation (bleeding on cut)

## 1522. Gall stone impacted causing intestinal obstruction

a) Raynods pentad

b) Hepatitis

c) Gallstone ileus

d) Obstructive jaundice

Correct Answer - C
**Answer- C. Gallstone ileus**
Gallstone ileus refers to mechanical intestinal obstruction resulting from the passage of a large gallstone into the bowel lumen.
The stone enters the duodenum through a cholecystoenteric fistula.
The site of obstruction by the impacted Gall stones is usually the terminal end of the ileum provided that the more proximal small bowel is of normal caliber.

**1523. A middle aged male complains of ache and mumbness and sensated of fatigus over his calf muscles that develops on exercise and is relieved on rest; this condition is not associated with**

a) Smoking

b) Hypocalcemia

c) Peripheral arterial disease

d) Hypertension and diabetes

Correct Answer - B

**Answer- B. Hypocalcemia**

- Hyperlipidemia
- Diabetes
- Hypertension
- Cigarette smoking
- Alcohol, lipoprotein (a)
- Chlamydia pneumonae
- Physcial inactivity
- Herpes virus
- CMV infection

## 1524. Seton used in fistula in ano is

a) Draining seton

b) Cutting seton

c) Dissolving seton

d) None

Correct Answer - B
**Answer- B. Cutting seton**
seton (Tight seton) : Made up of silk/prolene/monofilament nylon and used in fistula in ano
It promotes slow transection of external sphincter muscle as a result of pressure necrosis with minimum separation of ds. cut a fistula.

## 1525. Multiple air fluid levels in X-ray of abdomen is seen in

a) Hollow viscera perforation

b) Pyoperitoneum

c) Intestinal obstruction

d) None

Correct Answer - C

**Answer- C. Intestinal obstruction**

The obstruction may be due to adhesion, hernia, neoplasm, foreign body etc.

A normal person has on average 4 air fluid levels. Most of them are seen in the colon.

For the diagnosis of small intestinal obstruction, we should see more than 2 air fluid levels among the dilated loops of small bowel.

## 1526. Mondor's disease is ?

a) Thrombophlebitis of the Superficial veins of Breast

b) Carcinoma of the breast

c) Premalignant condition of the breast

d) Filariasis of the breast

Correct Answer - A

**Ans is 'a' i.e., Thrombophlebitis of Superficial veins of Breast**

- Mondor's disease
- is thrombophlebitis of the superficial veins of anterior chest wall and breast although it has also been seen in the arm.
- frequently involved veins are lateral thoracic vein, thoracoepigastric vein and superficial epigastric veins.
- aetiology is unknown
- also known as 'string phlebitis', it presents as a tender cord-like structure.
- The women may present with acute pain in the lateral asepct of breast or the anterior chest wall. A tender cord-like superficial thrombosed vein is formed and when the skin over the breast is stretched by raising the arm, a narrow shallow subcutaneous groove alongside the cord becomes apparent.
- rarely it may be bilateral.
- Management
  it's a benign self-limited disorder
  The differential diagnosis is lymphatic permeation from an occult carcinoma of breast
  When the diagnosis is uncertain or a mass is present near the cord, a biopsy may be done. Treatment
- antiinflammatory drugs and warm compresses

- restricted arm movements as well as brassiere support of breast
- it usually resolves within 4 to 6 weeks. When symptoms persists or are refractory to treatment, the involved vein segment may be excised.

## 1527. Treatment of rib fracture ?

a) Immediate thoracotomy

b) IPPV

c) Analgesics

d) b and c

Correct Answer - C
Answer is 'c' i.e. Analgeic
Rib fractures are the most common injuries after blunt chest trauma. Ribs 4 to 10 are usually fractured.

- Management of # rib
  - *Pain control with oral or i.v. analgesics or intercostal nerve blocks or epidural analgesia.(Poor pain control significantly contributes to complications such as atelectasis and pneumonia)*
  - *Chest strapping is no longer advised.*
- Management of flail chest, as mentioned in previous question, may need IPPV.

## 1528. Triangle of Doom is bounded by all of the following except:

a) Cooper's ligament

b) Vas deferens

c) Gonadal vessels

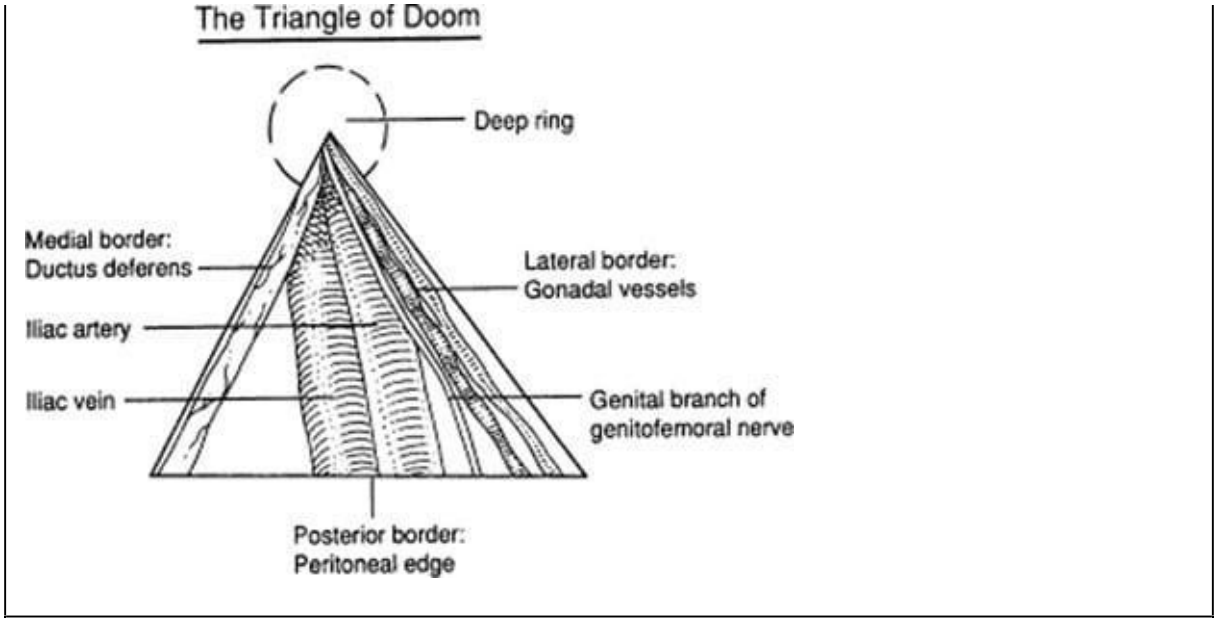
d) Peritoneal reflection

Correct Answer - A
Ans is a i.e. Cooper's ligament
**The triangle of doom** is bounded

- Medially by the vas deferens
- Laterally by the vessels of the spermatic cord (gonadal vessels)
- Inferiorly by peritoneal reflection

**Apex** oriented superiorly at **internal ring**.
**The contents** of the space include

- External iliac vessels
- Deep circumflex iliac vein
- Femoral nerve
- Genital branch of the genitofemoral nerve


The Triangle of Doom
Deep ring
Medial border:
Ductus deferens
Lateral border:
Gonadal vessels
Iliac artery
Iliac vein
Genital branch of
genitofemoral nerve
Posterior border:
Peritoneal edge

**1529.** **Commonest type of anal canal carcinoma is?**

a) Squamous cell carcinoma

b) Adenocarcinoma

c) Adenoacanthoma

d) Papillary type

Correct Answer - A

**Squamous cell carcinoma is the most common type of anal cancer. This cancer begins in the outer lining of the anal canal.**

**Mainly three types of malignant neoplasm are seen in anal canal**

- Squamous cell carcinoma (most common)
- Basal cell carcinoma (2nd most common)
- Melanoma

**Also remember:**

Most common type of rectal and colon cancer **Adenocarcinoma**

**Ref:** S. Das textbook of surgery 3/e, Page 1078.

## 1530. Blunt trauma chest, first step in management after initial resuscitation is

a) CT scan

b) Angiography

c) X-ray chest

d) USG

Correct Answer - C
**Answer- C. X-ray chest**
First investigation of choice in any type of chest injury is chest X-ray.

## 1531. All are true about amoebic liver abscess except:

a) More common in females

b) More common in left lobe of liver

c) Metronidazole is mainstay of treatment

d) a and b

Correct Answer - D
Ans is D
a i.e. More common in females & b i.e. More common in left lobe of liver
“Male preponderance of greater than 10:1 has been reported in all studies”
The right lobe of the liver is more commonly affected than the left lobe.
amebic liver abscess is 7-12 times more common in men than in women, with a predominance among men aged 18-50 years.
Metronidazole 800 mg TDS for 5–10 days
Aspiration
Repeated imaging of liver

## 1532. False about hydatid cyst of liver:

a) Mostly asymptomatic

b) Most commonly located in right lobe of liver

c) Most common causative organism is echinococcus granulosus

d) Hepatic resection is never done

Correct Answer - D
Ans is 'd' i.e. Hepatic resection is never done
Laparoscopic aspiration, unroofing and evacuation of the hepatic hydatid cysts can be done.

## 1533. Hemorrhage after thyroidectomy is due to

a) External carotid artery

b) Internal carotid artey

c) Superior thyroid artery

d) Inferior thyroid artery

Correct Answer - C
**Answer C. Superior thyroid artery**
Is usually due to slipping of ligature on the superior thyroid artery. Hematomas may cause airway compromise and must be evacuated immediately.

## 1534. Foreign body aspiration in supine position causes which of the following parts of the lung commonly to be affected -

a) Apical left lobe

b) Apical lobe of right lung

c) Apical part of the lower lobe

d) Posterobasal segment of left lung

Correct Answer - C

Ans. is 'c' i.e. Apical part of right lower lobe

- *Right upper lobe - posterior segment*
- *Right lower lobe - superior segment*
- *Left lower lobe - superior segment*
- Right basilar segments (of lower lobe)

## 1535. Intralobar sequestration of lung takes its blood supply from -

a) Internal mammary artery

b) Descending abdominal aorta

c) Pulmonary artery

d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Descending abdominal aorta

- A sequestration consists of normally developed bronchioles and alveoli *supplied by systemic rather than pulmonary arteries.*
- *This blood supply is from the Aorta either above or below the diaphragm.*
- *Mostly* **(approx 95%)** *this is from the descending thoracic aorta.*
- **Other characteristic features of sequestration -**
- They occur most commonly in the lower lobes, L > R

. Lung sequestrations are of two types

## 1536. Dumping syndrome is due to:

a) Diarrhoea

b) Presence of hypertonic content in small intestine

c) Vagotomy

d) Reduced gastric capacity

Correct Answer - B

Answer is B (Presence of Hypertonic Contents in small intestine)

DUMPING SYNDROME refers to a syndrome of abdominal and vasomator symptoms which results from dumping of food stuffs with a high osmotic load, front the stomach, into the small bowel.

*Loss of storage capacity of stomach and ablation, by pass or destruction of pylorus, results in rapid emptying of hyperostnolar chyme into duodenummm and small intestine.* Extracellular fluid then shifts into the intestinal lumen to restore isotonicity resulting in decreased intravascular volume, which gives rise to the vasomotor symptoms. *Note* that while reduced gastric capacity contributes, option (b) is a more accurate answer.

**Dumping Syndrome is actually of two types:**

- Early dumping syndrome (as described above)
- Late dumping syndrome: This is *Reactive hypoglvcemia*$^{e}$*.* The carbohydrate load in thesmall intestine later causes a rise in plasma glucose, which in turn causes insulin levels to rise causing a secondary hypoglycemia.

## 1537. In case of benign mixed parotid tumours T/t of choice is -

a) Superficial Parotidectomy

b) Total parotidectomy

c) Leave facial nerve and remove all gland

d) Radical Parotidectomy

Correct Answer - A
Ans is 'a' ie Superficial parotidectomy
Schwartz writes - *"Treatment of benign neoplasms is surgical excision of the affected gland or, in the case of the parotid, excision of the superficial lobe with facial nerve dissection and preservation. The minimal surgical procedure for neoplasms of the parotid is superficial parotidectomy with preservation of the facial nerve. 'Shelling out' of the tumor mass is not recommended because of the risk of incomplete excision and tumor spillage."*
*Superficial **parotidectomy** is the **treatment of choice** for most **benign tumors** in the superficial lobe.*

**1538.** **Linitis plastica is a type of :**

a) Gastric ulcer

b) Ca stomach

c) Duodenal ulcer

d) None of the above

Correct Answer - B

***Linitis plastica is a type of adenocarcinoma. Adenocarcinoma is the most common form of stomach cancer. Linitis plastica spreads to the muscles of the stomach wall and makes it thicker and more rigid.***

***Linitis plastica is a subtype of gastric cancer*** that is characterized by diffuse infiltrating adenocarcinoma without obvious carters and ulcers.

It is thought to originate from parietal cell portion of gastric mucosa.

Because of its diffuse nature ,this form of gastric cancer ususally involves the whole stomach.

**Ref :** Clinical Scenarios in Surgical Oncology edited by Vijay P. Khatri

## 1539. True about blind loop syndrome, all except

a) Syndrome of bacterial overgrowth

b) Steatorrhea, mayeloblastic anemia & deficiency of fat soluble vitamins

c) Surgery is not indicated

d) 14C-xylose or 14C-cholyglycine breath tests are indirect tests for bacterial overgrowth

Correct Answer - C

**Answer- C. Surgery is not indicated**

**Features**

- Diarrhea
- Steatorrhea
- Megaloblastic anemia (vit. B12 deficiency)
- Weight loss
- Abdominal pain
- Fat soluble vitamin deficiency

**Treatmen**t

- Parentral vit. B1, therapy

**Broad spectrum antibiotics :**

1. Tetracycline or co-amoxyclav
2. Cephalexin + metronidazole
3. Chloremphenical

## 1540. Liver transplantation was first done by ?

a) Starzl

b) Huggins

c) Carrel

d) Christian Benard

Correct Answer - A
Ans. is 'a' i.e., Starzl
The first human liver transplant was performed in 1963 by Dr. Thomas Starzl.

## 1541. % of malignancy in duct ectasia is

a) No risk

b) 1.5:1

c) 7:1

d) 10:1

Correct Answer - A
**Answer- A. No risk**
Duct ectasia
Cysts
Apocrine metaplasia
Apocrine metaplasia
Mild hyperplasia
A denosis
Fibroadenoma (without atypia)
No increased risk for cancer

## 1542. Tissue suturing glue contains:

a) Cyanoacrylate

b) Ethanolamine oleate

c) Methacrylate

d) Polychloroprene

Correct Answer - A
Ans is 'a' i.e. Cyanoacrylate
Most tissue adhesives or glue are cyanoacrylate polymers, such as n-butyl-2-cyanoacrylate (eg, Histoacryl®, PeriAcryl®) or 2-octyl cyanoacrylate (eg, Dermabond®, Surgiseal).
Cyanoacrylate tissue adhesives are liquid monomers that undergo an exothermic reaction on exposure to moisture (eg, on the skin surface), changing to polymers that form a strong tissue bond. When applied to a laceration, the polymer binds the wound edges together to allow normal healing of the underlying tissue.
Compared with wounds closed with sutures, the tensile strength of wounds closed by tissue adhesives is less at the time of initial application, but equalizes by one week post-repair.
**Advantages:**

- Less painful application, and sometimes no need for local anesthetic injection
- More rapid application and repair time
- Cosmetically similar results at 12 months post-repair
- Waterproof barrier
- Antimicrobial properties
- Better acceptance by patients
- No need for suture removal or follow-up
- **Indications and contraindications:**

- For use of tissue adhesives the wound needs to be clean, dry with near perfect hemostasis and under no tension.
- Complex stellate lesions or crush injuries should not be closed with tissue adhesives since good wound approximation is difficult to achieve.
- Tissue adhesives are not recommended for lacerations of the hands, feet, or joints, since repetitive movements could cause the adhesive bond to break before sufficient tensile strength is achieved.
- Tissue adhesives are not recommended for the oral mucosa or other mucosal surfaces or areas of high moisture such as the axillae and perineum.
- Lacerations involving the hairline or vermilion border require more precision, and should be repaired with traditional sutures.

**1543.** **Dysphagia lusoria is due to?**

a) Esophageal diverticulum

b) Aneurysm of aorta

c) Esophageal web

d) Compression by aberrant blood vessel

Correct Answer - D

**Dysphagia lusoria** is a disorder of swallowing caused due to vascular anomalies and includes:

- A right aortic arch
- A double aortic arch
- A vascular constricting ring formed by a PDA or a ligamentum arteriosum and pulmonary artery or aortic arch
- An abnormal right subclavian artery
- An abnormal innominate artery

**Diagnosis** is made by lipoidal swallow or arteriography.

**Ref:** Bailey and Love 24/e, Page 995

## 1544. Recurrent anal fistula, most appropriate investigation is

a) Endorectal US

b) Colonoscopy

c) MRI

d) Proctoscopy

Correct Answer - C
**Answer- C. MRI**
MRI is most accurate investigation for determining presence and course of recurrent anal fistulae.

## 1545. Anal fissure diagnosed by

a) TRUS

b) Colonoscopy

c) Clinical examination

d) Ba enema

Correct Answer - C
**Answer- C. Colonoscopy**
Anal fissure is a linear ulcer of the lower half of the anal canal, thus can be diagnosed by visually inspecting the anal verge with gentle separation of the gluteal cleft.
The history is typical of pain and bleeding with defecation

## 1546. 70 yr old female with bleeding from proximal colon

a) Colitis

b) Polyp

c) Diverticulitis

d) Ca colon

Correct Answer - D
**Answer- D. Ca colon**
Bleeding per rectum in old age suggests the diagnosis of colorectal carcinoma.
Symptoms of colorectal carcinoma are non-specific and generally develop when the cancer is locally advanced.
Symptoms vary with the anatomic location of the tumor.
Abd. pain
Anemia (microcytic hypochronic anemia indicative of iron def.)
Fatigue, palpitation and even angina pectoris
Mass in right iliac fossa
A cecal carcinoma can act as lead point in intussusception

**1547. A 25 year old man presents with 3 days history of pain in the right lower abdomen and vomitings. patient's general condition is satisfactory and clinical examination reveals a tender lump in right iliac fossa. The most appropriate management in this case would be**

a) Immediate appendicectomy

b) Exploratory laprotomy

c) Oschner Sherren regimen

d) External drainage

Correct Answer - C

Ans. is 'c' i.e., Oschner Sherren regimen

- The patient is presenting with typical clinical features of appendical mass.
  - If an appendix mass is present and the condition of the patient is satisfactory, the standard treatment is the conservative Ochsner-Sherren regimen.
  - This strategy is used as the inflammatory process is already localised and that inadvertent surgery is dificult and may be dangerous.
  - It may be impossible to find the appendix and, occasionally, a faecal fistula may form.
  - For these reasons, it is wise to observe a non-operative programme

but to be prepared to operate should clinical deterioration

**1548. A 27 year old patient presented with left sided abdominal pain 6 hours after RTA. He was hemodynamically stable and FAST positive. CT scan showed grade III splenic injury. What will be appropriate treatment**

a) Splenectomy

b) Splenorrhaphy

c) Splenic artery embolization

d) Conservative management

Correct Answer - D

**Answer- D. Conservative management**

"In early reports, most investigators expressed extreme caution regarding nonoperative management of grades III and IV, even with hemodynamic stability. As experience has accumulated, most feel comfortable with observing stable grade III injuries, and many have begun observing grade IV and V injuries". --Sabiston

## 1549. Retraction ball seen in

a) Burns

b) Acute pancreatitis

c) Diffuse axonal injury

d) Tracheobronchial injury

Correct Answer - C
**Answer- C. Diffuse axonal injury**
At the distal tip of the amputated axon there is often and enlarged ball shaped collection of cytoplasm termed a 'retraction ball'.
Axonal retraction balls- The Hallmark of Diffuse Axonal Injury.

## 1550. Prophylactic thyroidectomy is indicated in

a) Hashimoto thyroiditis

b) MEN type 2

c) Riedel thyroiditis

d) De-Quervain's thyroiditis

Correct Answer - B

**Answer- B. MEN type 2**

- MEN type 2 syndrome consists of medullary carcinoma thyroid, for patients in low to high-risk groups, prophylactic thyroidectomy is recommended by age 5.
- Prophylactic thyroidectomy is indicated in **MEN 2B** syndrome.
- Medullary thyroid carcinoma (MTC) can be inherited as **familial MTC, MEN 2A** or **MEN 2B** syndromes.
- These conditions are autosomal dominant and occur due to **RET proto-oncogene mutation**.
- Individuals with RET mutation are very likely to develop MTC at a younger age. Once the mutation is confirmed, it is advised to undergo prophylactic thyroidectomy.

## 1551. Prophylactic Thyroidectomy for MEN 2 is recommended at age of

a) 5 years

b) Before 1 year

c) When detected

d) Any time

Correct Answer - A
**Answer- A. 5 years**
MEN type 2 syndrome consists of medullary carcinoma thyroid, for patients in low to high risk groups, prophylactic thyroidectomy is recommended by age 5.

**1552. The following *is* the commonest site for venous ulcer:**
***March 2013 (a, e)***

a) Lower third of leg and ankle

b) Instep of foot

c) Lower 2/ 3rd of leg

d) Middle 1/3rd of leg

Correct Answer - A
Ans. A i.e. Lower third of leg and ankle

- Venous ulcers usually lie just proximal to the medial or lateral malleolus.
  - *Venous ulcers are accompanied by lipodermatosclerosis and hemosiderosis (if these are not present then the ulcer is probably not of venous origin).*

## 1553. Cleft palate is ideally repaired at

a) 5 month of age

b) 1 year of age

c) Before going to school

d) 6-8 years of age

Correct Answer - B
**Answer- B. 1 year of age**
**Timing of Repair of Cleft Palate**

- According to Sabiston - before 12 months
- According to Schwartz - at 9 to 12 months of age
- According to Bailey & Love - between 6 and 18 months

## 1554. Heller's myotomy is done for:
***September 2007, 2009, 2010***

a) Esophageal carcinoma

b) Pyloric hypertrophy

c) Achalasia cardia

d) Inguinal hernia

Correct Answer - C
Ans. C: Achalasia cardia
Achalasia is associated with loss of ganglion cells in the esophageal myenteric plexus.
These important inhibitory neurons induce LES relaxation and coordinate proximal-to-distal peristaltic contraction of the esophagus
Achalasia is an esophageal motor disorder characterized by increased lower esophageal sphincter (LES) pressure, diminished-to-absent peristalsis in the distal portion of the esophagus composed of smooth muscle, and lack of a coordinated LES relaxation in response to swallowing.
Barium radiology may show 'bird's beak' appearance.
Esophageal (Heller) myotomy is a surgical procedure that is performed with minimally invasive techniques. The laparoscopic approach appears to be most appropriate.

## 1555. Radiofrequency ablation is

a) Derived from AC current

b) Used to separate fascial planes during surgery

c) Uses microwave

d) Used for hemostasis

Correct Answer - A
**Answer- A. Derived from AC current**
Radiofrequency ablation is a medical procedure in which part of the electrical conduction system of the heart, tumor or other dysfunctional tissue is ablated using the heat generation from high frequency alternating current (in the range of 350-500 KHz).

## 1556. Malignant melanoma false is

a) Radiosensitive

b) Surgery is the treatment of choice

c) Acral lentiginous has worst prognosis

d) Treatment is mide local excision

Correct Answer - A

**Answer- A. Radiosensitive**

- Melanoma are among the most radioresistant tumors.
- There are 4 common type of melanoma (these are in order of decreasing frequency)

1. Superficial spreading type (most common)
2. Nodular
3. Lentigo maligna
4. Acral lentiginous (least common)

- Wide local excision of the primary tumor is the management of choice.

[Ref Sabiston IV/Ye p. 742; Schwartz 10th/e p. 488, 490; Harrison 17thle p. 541; Chandrasoma Taylor 3rd/e p. 895]

# 1557. DVT not common causes

a) Prolonged immobilizationa

b) Extensive pelvic sx of > 30 minutes

c) Obesity

d) Age less than 40

Correct Answer - D

**Answer- D. Age less than 40**

**A) Venous Thrombosis**

1. Inherited : Factor V Leiden (Leiden factor), antithrombin III deficiency, Protein S deficiency, Protein C deficiency.
2. Acquired : Old age, immobilization, prolonged bed rest, major surgery (e.g orthopaedics hip surgery), major trauma, pregnancy and pureperium, obesity, infection.

**B) Both arterial and venous thrombosis**

1. Inherited : Homocystinuria/homomtinemia, dysfibrinogenemia.
2. Acquired : Malignancy, antiphospholipid syndrome (lupus anticoagulant), hormonal therapy (estrogen component of DCPs), polycythemia, PNH, DIG.

## 1558. Fogarty's catheter is used for

a) Embolization

b) Embolectomy

c) Radiofrequency ablation

d) Angiography

Correct Answer - B

**Answer- B. Embolectomy**

- Fogarty's catheter is an embolectomy catheter indicated for the removal of fresh, soft emboli and thrombi from vessels in the arterial system.
- The Fogarty embolectomy catheter has been found useful in minimizing blood loss in large surgical procedures about the hip and pelvis. Its utility lies in the ability to achieve temporary intraluminal occlusion of the common iliac artery while the proposed surgical procedure is being carried out.

**1559.**

## Aganglionic segment is encountered in which part of colon in case of Hirschsprung disease *?*

a) Distal to dilated segment

b) In Whole colon

c) Proximal to dilated segment

d) In the dilated segment

Correct Answer - A
Ans. is 'a' i.e., Distal to dilated segment
Congenital aganglionic megcolon (Hirschsprung disease)
o Hirshsprung disease a congenital disorder characterized by aganglionosis of a portion of the intestinal tract.
o An intestinal segment **lacks both Meissner submucosal and Auerbach myenteric plexuses.** This leads to functional obstruction and intestinal dilation Proximal to the affected segment.
o Histological findings are :-
*(i) Absence of ganglion cells and ganglia in the muscle wall and submucosa of the affected segment.*
*(ii) Thickening and hypertrophy of nerve trunk.*
*o Rectum is always affected with* involvement of more proximal colon to variable extent --> most cases involve the rectum and sigmoid only.
o Proximal to the aganglionic segment, the colon undergoes progressive dilation and hypertrophy. o With time, the proximal innervated colon may become massively distended --> **megacolon.**

## 1560. "Cork screw appearance" is characteristic of?

a) Carcinoma esophagus

b) Hypertrophic pyloric stenosis

c) Diffuse esophageal spasm

d) Sigmoid volvulous

Correct Answer - C
Diffuse esophageal spasm REF: Wofganag 5th e p. 846/748

| Sign | Disease |
|---|---|
| Rat tail appearance | Carcinoma esophagus |
| Bird beak appearance | Achalasia |
| Beak sign/ double track/ tram track | Hypertrophic pyloric stenosis |
| Medusa head colonies on CT | Round worm |
| Pincer/claw/coiled spring/target/ meniscus sign | Intussception |
| Coffee bean sign | Sigmoid volvulous |
| Lead pipe appearance | Ulcerative colitis |
| String of kantor/bull's eye | Chron's disease |
| Thumb printing sign | Ischemic colitis |
| Saw tooth appeance on barium enema | Diverticulosis |
| Apple core sign | Carcinoma colon |
| Cork screw appearance | Diffuse esophageal spasm |
| String sign | Hypertrophic pyloric stenosis |

## 1561. Choledochal cyst is dilatation of

a) Gall bladder

b) CBD

c) Hepatic duct

d) Bile duct

Correct Answer - D
**Answer- D. Bile duct**
A choledochal cyst is an isolated or combined congenital dilatation of the extrahepatic or intrahepatic biliary tree.

## 1562. False about retroperitoneal fibrosis is

a) Ureter is most commonly involved

b) More common in females

c) Primary idiopathic form is called ormond's disease

d) Corticosteroids are mainstay of treatment

Correct Answer - B

**Answer- B. More common in females**

**RETROPERITONEAL FIBROSIS (ORMOND'S DISEASE)**

RPF is an uncommon inflammatory condition characteristed by proliferation of fibrous tissue in the retroperitoneum.

**The major structure involved are-**

1. Ureter - Most commonly involved
2. Aorta
3. Inferior venacava

- Corticosteroids, with or without surgery, are the mainstay of medical therapy.

## 1563. Most commonly affected in ormond's disease

a) Aorta

b) IVC

c) Ureter

d) Gonadal vessels

Correct Answer - C
**Answer- C. Ureter**
**The major structure involved are-**
1. Ureter - Most commonly involved
2. orta
3. Inferior venacava

## 1564. Mucocele of gall bladder, false statement is

a) Complication of gall stones

b) Treatment is early cholecystectomy

c) Obstruction at neck of gall bladder

d) Gall bladder is never palpable

Correct Answer - D
**Answer- D. Gall bladder is never palpable**
It is one of the complications of Gall stones.
Caused due to obstruction of the stone at the neck of the bladder.
The t/t is early cholycystectomy.

## 1565. Which of the following is not a sign seen in acute apendicitis

a) Rovsing's

b) Rosenstein's sign

c) Boa's sign

d) Hamburger sign

Correct Answer - C
Ans. is 'C'
Accessory signs of appendicitis

- **Aure-Rozanova's sign:** Increased pain on palpation with finger in right Petit triangle (can be a positive Shchetkin-Bloomberg's).
- **Bartomier-Michelson's sign**: Increased pain on palpation at the right iliac region as the person being examined lies on his or her left side compared to when he/she lies on the back.
- **Dunphy's sign:** Increased pain in the right lower quadrant with coughing.
- **Hamburger sign:** The patient refuses to eat (anorexia is 80% specific for appendicitis)
- **Kocher's (Kosher's) sign:** From the person's medical history, the start of pain in the umbilical region with a subsequent shift to the right iliac region.
- **Massouh sign**: Developed in and popular in southwest England, the examiner performs a firm swish with his or her index and middle finger across the abdomen from the xiphoid process to the left and the right iliac fossa. A positive Massouh sign is a grimace of the person being examined upon a right sided (and not left) sweep.
- **Obturator sign:** The person being evaluated lies on her or his back with the hip and knee both flexed at ninety degrees. The examiner

holds the person's ankle with one hand and knee with the other hand. The examiner rotates the hip by moving the person's ankle away from his or her body while allowing the knee to move only inward. A positive test is pain with internal rotation of the hip.

- **Psoas sign,** also known as "Obraztsova's sign", is right lower-quadrant pain that is produced with either the passive extension of the right hip or by the active flexion of the person's right hip while supine. The pain that is elicited is due to inflammation of the peritoneum overlying the iliopsoas muscles and inflammation of the psoas muscles themselves. Straightening out the leg causes pain because it stretches these muscles, while flexing the hip activates the iliopsoas and causes pain.
- **Rovsing's sign:** Pain in the lower right abdominal quadrant with continuous deep palpation starting from the left iliac fossa upwards (counterclockwise along the colon). The thought is there will be increased pressure around the appendix by pushing bowel contents and air toward the ileocaecal valve provoking right-sided abdominal pain.
- **Sitkovskiy (Rosenstein)'s sign:** Increased pain in the right iliac region as the person is being examined lies on his/her left side

## 1566. Investigation of choice for 74 yr old male patient scanty bleeding per rectum irregular bowel habits

a) Sigmoidoscopy

b) Barium enema

c) Colonoscopy

d) Barium meal follow through

Correct Answer - B

**Answer- B. Barium enema**

The clinical features suggest diagnosis of diverticulosis.

They are mainly found in the colon (mainly the left side of colon) with sigmoid colon being the most common site.

Colonic diverticulosis is best diagnosed by Barium enema.

## 1567. Obstruction and dilatation of large intestine in absence of any mechanical obstruction

a) Ogilve syndrome

b) Hirschsprung disease

c) Chagas disease

d) None

Correct Answer - A

**Answer- A. Ogilve syndrome**

Ogilvie syndrome, or acute colonic pseudo-obstruction (ACPO), is a clinical disorder with the signs, symptoms, and radiographic appearance of an acute large bowel obstruction with no evidence of actual physical cause of the obstruction.

## 1568. Thyroid nodule increased radioisotope uptake IOC is

a) Biopsy

b) Thyroid scan

c) FNAC

d) None

Correct Answer - C
**Answer- C. FNAC**
isotope scanning a thyroid nodule can be 'hot, 'warm' or 'cold'.
FNAC is the investigation of choice for solitary thyroid nodule.

# 1569. The tendency of colonic carcinoma to metastasize is best assessed by -

a) Size of tumor

b) Carcinoembryonic antigen (CEA) levels

c) Depth of penetration of bowel wall

d) Proportion of bowel circumference involved.

Correct Answer - C
Ans. is c) i.e. depth of penetration of bowel walls

- Schwartz writes
*"Regional lymph node involvement is the most common form of spread of colorectal carcinoma and usually preceeds distant metastasis or the development of carcinomatosis. the T stage (depth of invasion) is the single most significant predictor of lymph node spread."*
- From the above given lines *'depth of penetration of bowel wall'* appears to be predictor of distant metastases as well.
- CEA level is a marker for recurrance of colorectal ca after surgical resection.
- Though its preoperative levels has *some prognostic significance,* it is not a predictor for distant metastasis.
- CEA level is used to follow up post operative cases of colorectal cancer, for early detection of recurrance.

## 1570. What is intussuscepiens

a) The entire complex of intussusception

b) The entering layer

c) The outer layer

d) The process of reducing the intussusception

Correct Answer - C
**Answer- C. The outer layer**
**An intussusception is composed of three parts :**

- The entering or inner tube - intussusceptum
- The returning or middle tube
- The sheath or outer tube - intussuscipiens

**1571. Gum tumor with 5 cm in dimension and contralateral lymph node enlargement of 2 cm. There is no distant metasis. The stage of tumor :**

a) T3N2M0

b) T2N2M0

c) T1N2Mo

d) T3N3M0

Correct Answer - A

**Answer- A. T3N2M0**

**TNM STAGING OF ORAL CARCINOMA**

**Primary tumor, as follows:**

- T0 - No primary tumor
- Tis - Carcinoma in situ
- T1 - Tumor 2 cm or smaller
- T2 - Tumor 4 cm or smaller
- T3 - Tumor larger than 4 cm
- T4 - Tumor larger than 4 cm and deep invasion to muscle, bone, or deep structures (eg, antrum)

**Lymphatic node involvement, as follows:**

- N0: No regional lymph node metastasis
- N1: Metastasis in a single ipsilateral lymph node
- N2a: Metastasis in a single ipsilateral lymph node >3 cm but not > 6 cm
- N2b: Metastasis in multiple ipsilateral lymph nodes, none >6 cm in greatest dimension
- N2c: Metastasis in bilateral or contralateral lymph nodes, none >6

cm in greatest dimension

- N3: Metastasis in any lymph node >6 cm

**Tumor metastasis(M), as follows:**

- M0 - No metastasis
- M1 - Metastasis noted

**Staging**

**Stage I : T1, N0, M0.**

**Stage II : T2, N0, M0.**

**Stage III :**

- T3, N0, M0
- T1, T2, T3, N1, M0

**Stage IV :**

- T4, N0, M0
- Any T, N2 or N3, M0
- Any T, any N, any M

## 1572. Which is M.C. site for iatrogenic oesophageal perforation -

a) Abdominal portion

b) Cervical portion

c) Above arch of aorta

d) Below arch of aorta

Correct Answer - B
Ans is 'b' ie Cervical portion

- Oesophageal perforation is of two types
- Iatrogenic (MC) :
  - *Common site is cervical esophagus Just above the upper sphinctcr.*
- Spontaneous rupture : *as seen in Boerhaaves syndrome (Rupture of esophagus after vomitting)*
  - *common in the lower 1/3 of esophagus.*

## 1573. The most common type of Tracheo-Oesophageal Fistula is -

a) Esophageal atresia without tracheoesophageal fistula

b) Esophageal atresia with proximal tracheoesophageal fistula

c) Esophageal atresia with distal tracheoesophageal fistula

d) Esophageal atresia with proximal and distal fistula

Correct Answer - C

**Ans. is 'c' i.e., Esophageal atresia with distal tracheoesophageal fistula**

- TEF is classified into five types based on presence of esophageal atresia and location of fistula:?

1) Type A : There is *esophageal atresia without TEF.* There is no gas in abdomen. It is 2$^{d}$ most common type.

2) Type B : There is proximal TEF. There is no gas in abdomen.

***3)*** **Type C :** There is *proximal esophageal atresia with distal TEF.* Gas in abdomen is present. It is *most common.*

***4)*** **Type D :** Both proximal and distal fistula are present. Gas in abdomen is present. It is *least common.*

**5) Type E :** Isolated TEF (H or N type) is there.

## 1574. Flap commonly used in breast reconstruction is?

a) Serratus anterior

b) TRAM

c) Flap from arm

d) Delto pectoral flap

Correct Answer - B
Ans. is 'b' i.e. TRAM
*(Most common)* Single Pedicle Double Pedicle Free flap
Deep inferior epigastric perforator flap

## 1575. Most common cause of duodenal obstruction in adults

a) Lymphoma

b) Ca pancreas

c) Ca liver

d) Ca gall bladder

Correct Answer - B

**Answer- B. Ca pancreas**

Most common cause of duodenal obstruction (gastric outlet obstruction) in adults → Peptic ulcer disease.

Most common cause of gastric outlet obstruction → Pyloric stenosis

Most common cancer causing duodenal obstruction → Pancreatic cancer.

## 1576. Most common cause of small intestine obstruction is?

a) Intussception

b) Idiopathic adhesions Tumors

c) Tumors

d) Postoperative adhesions

Correct Answer - D
Postoperative adhesions REF: Bailey & Love 25th edition page 1188, http://emedicine.medscape.com/article/774140overview
"The most common cause of small-bowel obstruction (SBO) is postsurgical adhesions"
The most common causes of intestinal obstruction in adults are:

- Intestinal adhesions — bands of fibrous tissue in the abdominal cavity that can form after abdominal or pelvic surgery

In children, the most common cause of intestinal obstruction is telescoping of the intestine (intussusception).

# 1577. M.C. site of CA oesophagus is -

a) Middle 1/3rd

b) Upper 1/3rd

c) Lower 1/3rd

d) Lower end of esophagus

Correct Answer - A

*Ans is (a) ie Middle 1/3rd*

- Well, I am not quite sure of the answer.
- Esophageal Carcinoma is of two common histological types
  *i)* Squamous cell Ca - the MC type in world *(-95% according to Sabiston)*
  *ii)* Adenocarcinoma - where incidence is increasing at a rapid rate and is now the MC type in USA *(Ref. Harrison, Schwartz)*
- Distribution of Squamous Cell Ca.
  Upper 1/3 10%
  Middle *113* 60%
  Lower 1/3 30%
- Adenocarcinoma is mainly located in lower 1/3.
- Nowhere, I could get the MC site of esophageal carcinoma overall (including both squamous and adeno variety). [Harrison writes the MC site to be lower 1/3, but it gives incidence for US population only, not for the whole world]
- But one thing is sure - *squamous cell Ca is the MC type of esophageal cancer in world [(Ref: Bailey & Love, 25/e p1026 (24/e p1009); Robbins 8/e p772 (7/e p806); Sabiston I8/e p1090 (I7/e p1118)]*
- So I presume that the overall MC site would be the MC site involved by the MC type of esophageal cancer i.e. -* Middle 1/3

*So remember*

- MC type of esophageal Ca in world -> Squamous Cell Ca (--95%)
  MC site -> Middle 1/3

## 1578. Case of diagnosed cholecystitis presentation acute pain sharp going to the back diagnosis

a) Acute pancreatitis

b) Cholecystitis

c) Appendicitis

d) Aortic aneurysm

Correct Answer - A

**Answer- A. Acute pancreatitis**

**Clinical features-**

- Acute severe, refractory, upper abdominal pain radiating to back
- Some patients may gain relief by sitting or leaning forwards
- Icterus can be caused by biliary obstruction in gallstone pancreatitis
- Grey turner's sign – bluish discolouration of the flanks
- Cullen's sign – bluish discoloration around umbilicus
- Fox sign – discoloration below inguinal ligament
- Shock, acute renal failure, ARDS, MODS
- Left sided pleural effusion

**1579. Man presented with acute abdomen, when man was put in knee chest position helped to relieve the pain what might be the cause.**

a) Acute pancreatitis

b) Cholecystitis

c) Superior mesenteric artery ischemia

d) Renal

Correct Answer - A
**Answer- A. Acute pancreatitis**
Acute severe, refractory, upper abdominal pain radiating to back
Some patients may gain relief by sitting or leaning forwards
Icterus can be caused by biliary obstruction in gallstone pancreatitis
Grey turner's sign – bluish discolouration of the flanks
Cullen's sign – bluish discoloration around umbilicus
Fox sign – discoloration below inguinal ligament
Shock, acute renal failure, ARDS, MODS
Left sided pleural effusion

## 1580. Man gunshot wound in thorax chest tube 1900 ml blood, 200 ml of blood lost per hr. next step

a) Blood transfusion

b) Thoracotomy

c) PPV

d) FFP

Correct Answer - B
**Answer- B. Thoracotomy**
Initial drainage of more than 1500 ml blood or on going hemorrhage of more than 200 ml/hr over 3-4 hours is generally con¬sidered an indication for thoracotomy.

## 1581. Most common cause of acute abdomen in young girl

a) Acute appendicitis

b) ovarian torsion

c) Mitzschmerz

d) Renal colic

Correct Answer - A
**Answer- A. Acute appendicitis**
Most common cause of acute abdomen in yound women is acute appendicitis.
Other causes are intestinal obstruction, diverticulitis, adnexal torsion, ovarian cyst rupture/hemorrhage, PID, endometriosis and dysmenorrhea.

## 1582. Lateral border of tongue carcinoma after resection

a) Chemotherapy

b) Radiotherapy

c) Observation

d) Neck dissection

Correct Answer - D
**Answer- D. Neck dissection**
If regional lymphnodes are involved- Modified radical neck dissection or selective neck dissection is done.
Indications for postoperative radiation therapy include evidence of perineural or angiolymphatic spread or positive nodal disease.

## 1583. Commonest cause of pyogenic liver abscess ?

a) Stricture of CBD

b) Biliary Colic

c) Appendicitis

d) Sigmoid Diverticulitis

Correct Answer - A

Ans is 'a' ie Stricture of CBD

- Most common route of infection to liver is along the bile duct. It may be due to : -

i) Stone impacted in CBD.

ii) Benign or malignant stricture of CBD.

Most common infecting organisms are E.coli and Klebsiella pneumonia

## 1584. Following is least common about angiodyplasia of colon -

a) Involvement of cecum

b) Involvement of rectum in 50% of cases

c) Affecting age group > 40 yrs.

d) Cause of troublesome lower G.I. hemorrhage

Correct Answer - B
Ans. is 'b' i.e., Involvement of rectum in 50% cases
Site: Occur most commonly in the ascending colon and caecum; however they can also occure in rest of colon and small bowel.
Clinical features

- Anemia - most common presentation
- Hemoatochezia
- Malena
- There is an association with aortic stenosis (heyd's syndrome).

## 1585. Curlings ulcer is seen in -

a) Burn patients

b) Patients with head injuries

c) Zollinger Ellison syndrome

d) Analgesic drug abuse

Correct Answer - A
Ans. is 'a' i.e., Burn patients

- Curling ulcers: *are stress ulcers associated with burns and most commonly found in the first* part *of duodenum.*

## 1586. Decubitus ulcer is

a) Venous ulcer

b) Wet gangrene

c) Trophic ulcer

d) Post thrombotic ulcer

Correct Answer - C
**Aswer- C. Trophic ulcer**
Trophic ulcers are neurogenic ulcers which are caused by various factors such as impairment of nutrition of the tissues, inadequate blood supply and neurological deficit.

## 1587. Maximum weight reduction is by which surgery

a) BPD

b) Roux en Y gastric bypass

c) Sleeve gastrectomy

d) Gastric banding

Correct Answer - A
**Answer- A. BPD**
**Mixed procedures**
1. Gastric bypass (Roux en Y gastric bypass)
2. Sleeve gastrectrney with duodenal snitch
3. Implantable gastric stimulation

- In general malabsorptive procedures lead to more weight loss than restrictive procedures however morbidity risks are greater.
- Studies have shown that it is maximum with Biliopancreatic diversion (BPD).

## 1588. Most common organism associated with breast abscess

a) Streptococcus

b) Staphylococcus aureus

c) Klebsiella

d) None

Correct Answer - B

**Answer- B. Staphylococcus aureus**

- Staphylococcus aureus is the most common cause of breast abscess.
- Most are caused by S. aureus and, if hospital-acquired, are likely to be penicillin-resistant.
- Staphylococcus aureus causes the clotting of milk in the blocked duct and multiply. Duct initially gets blocked by epithelial debris or by the retracted nipple.

## 1589. All is true about skull fracture except

a) Puppes rule gives the sequence of fracture

b) Pond fracture is a mild depressed fracture

c) Fissured fracture is most common

d) Skull fractures are due to traction

Correct Answer - B

**Answer- B. Pond fracture is a mild depressed fracture**

**Types of Skull fracture-**

1. Linear or fissured fracture: are the most common skull fractures.
2. Depressed Fracture
3. Comminuted fracture
4. Pond or indented fracture- This is a simple dent of the skull, occurring only in skull of infants, for eg. in oblique bullet wounds.
5. Gutter fractures
6. Ring or foramen fractures

**Puppe's rule**

- It help to assess the chronological order in which fracture were formed, since later fractures will typically stop at previously formed ones.

## 1590. Hunterian perforators are seen in ?

a) Upper thigh

b) Lower thigh

c) Calf

d) Mid thigh

Correct Answer - D
Ans. is 'd' i.e., Mid thigh
Mid-thigh (Mid-hunter) - Adductor canal- Great saphenous with femoral

- Hunter perforator (Hunterian perforator or adductor canal perforator) is seen in mid thigh.

**1591.** **A patient with external hemorrhoids develops pain while passing stools. Which of the following nerve mediating this pain?**

a) Pudendal nerve

b) Hypogastric nerve

c) Sympathetic plexus

d) Splanchnic visceral nerve

Correct Answer - A

*External hemorrhoids* are covered by the mucous membrane of the lower half of the anal canal or the skin, and they are innervated by the inferior rectal nerves. Inferior rectal nerve is a branch of pudendal nerve. Lower half of anal canal is sensitive to pain, temperature, touch, and pressure.

- The pectinate line indicates the level where the upper half of the anal canal joins the lower half.
- The mucous membrane of the upper half is sensitive to stretch and is innervated by sensory fibers that ascend through the hypogastric plexuses.
- The involuntary internal sphincter is supplied by sympathetic fibers from the inferior hypogastric plexuses.
- The voluntary external sphincter is supplied by the inferior rectal nerve, a branch of the pudendal nerve and the perineal branch of the fourth sacral nerve.

## 1592. Cecum forms the posterior wall of which hernia

a) Sliding hernia

b) Rolling hernia

c) Incisional hernia

d) Hiatus hernia

Correct Answer - A

**Answer- A. Sliding hernia**

Sliding hernia is defined as any hernia in which part of the sac (usually the posterior) is formed by the wall of a viscus.

Cecum is involved on the right side and sigmoid colon is involved on left side.

It should be clearly understood that the caecum, appendix or part of colon wholly within a hernial sac does not constitute a sliding hernia (The viscera must form a wall of the sac to be termed as sliding hernia).

[Ref: Bailey & Love 26th/e p. 956]

## 1593. In last decade, duodenal ulcer and its morbidity is reduced due to

a) Life style modification

b) Eradication of H pylori

c) Proton pump inhibitors

d) None

Correct Answer - C

**Answer- C. Proton pump inhibitors**

In last decades, with the introduction of proton pump inhibitors and increased knowledge of perforated pectic ulcer (PPU) etiology the incidence of PPU has reportedly decreased in western countries.

## 1594. Posterior duodenal ulcer is related to

a) Gartoduodenal artery

b) Spleenic artery

c) Left gastric Artery

d) Sup mesentric artery

Correct Answer - A
**Answer- A. Gartoduodenal artery**
Gastroduodenal artery is the most common artery involved in duodenal ulcer haemorrhage.
Also remember
Peptic ulcer is the most common cause of massive upper gastrointestinal bleed (Duodenal ulcers > Gastric ulcer)

## 1595. Postion in surgery for pilonidal sinus

a) Sim's

b) Tredelenberg

c) Lithotomy

d) Jack knife

Correct Answer - D
**Answer- D. Jack knife**
For most procedures, patient is placed in prone jack knife position with slight trendelenburg.
Jack knife position
An anatomical position in which the patient is placed on the stomach with the hips flexed and the knees bent at a 90° angle and the arm outstretached in front of the patient.

## 1596. Length of flexible sigmoidoscope

a) 30 cm

b) 40 cm

c) 60 cm

d) 70 cm

Correct Answer - C
**Answer- C. 60 cm**
The length of rigid sigmoidoscope is 25 cm, where as flexible sigmoidoscope are 60 cm long.
[Ref Bailey & Love 25th/e p.1221; www.medicinenet.com]

## 1597. True about reactionary hemorrhage following surgery:
***UP 10***

a) Hemorrhage occurring within 48 h

b) Hemorrhage occurring within 36 h

c) Hemorrhage occurring within 24 h

d) Hemorrhage occurring during surgery

Correct Answer - C
Ans. Hemorrhage occurring within 24 h
Hemorrhage according to the Time of appearance can be classified as belows
**Primary hemorrhage**
- Is one which occur at the time of injury or operation.

**Reactionary hemorrhage**
- In majority of cases reactionary occur within 4 to 6 hours. Such bleeding may also occur due to:
  - Restlessness
  - Coughing
  - Vomiting with raises the venous pressure

**Secondary hemorrhage**
- This occurs usually after 7 to 14 days of injury or operation.
- This is usually due to infection and sloughing of a part of the arterial wall.

## 1598. In breast carcinoma metastasis, prognosis depends best upon -

a) Estrogen receptor status

b) Axillary lymphnode status

c) Size of tumour

d) Site of tumour

Correct Answer - A

Ans *is* 'a' i.e., Estrogen receptor status

- In case of metastasis, the prognosis no more depends upon the lymph node status.
- The lymph node status is the most important prognostic indicator for tumor localized to breast, as the presence of nodal metastasis implies systemic dissemination of cancer and hence a bad prognosis. But once a metastasis is discovered, the lymph node status is of little significance. Metastatic disease confers the breast tumor TNM stage IV status, with worst prognosis. Currently stage IV diseases are not curative.
- Schwartz 9/e writes - "Treatment *for stage IV breast cancer is not curative, but may prolong survival and enhance a women's quality of life. Hormonal therapies that are associated with minimal toxicity are preferred to cytotoxic chemotherapy. Appropriate candidates for initial hormonal therapy include women with hormone receptor-positive cancers; women with bone or soft tissue metastasis only; and women with limited and asymptomatic visceral metastasis.*
- About hormone receptors, CSDT 11/e, p 329 writes - *"the presence or absence of estrogen and progesterone receptors in the cytoplasm of tumor cells is of paramount importance in managing all patients with breast cancer, especially those with recurrent or metastatic*

*disease. They are of proved value in determining adjuvant therapy and therapy for patients with advanced disease. Upto 60% of patients with metastatic breast cancer will respond to hormonal manipulation if their tumors contain estrogen receptors. However fewer than 5% of patients with metastatic ER-negative tumors can be successfully treated with hormonal manipulation."*

## 1599. Charcot's triad is defined by all of the following except:
***September 2007, March 2009***

a) Fever

b) Gall stones

c) Jaundice

d) Pain

Correct Answer - B
Ans. **B:** Gall stones
Cholangitis is due to partial or complete obstruction of the biliary tree with resulting bile stasis and secondary bacterial or microbial infection of the biliary tree
**Causes ?**

- Common bile duct stones
- Benign biliary stricture (primary sclerosing cholangitis)
- Malignancy (head of pancreas adenocarcinoma, ampulla of Vater, bile duct tumors)
- Chronic pancreatitis
- Prosthesis or stents in the common bile duct

**Features:**

- Charcot's triad - right upper quadrant pain, fever, jaundice
- Reynolds' pentad - right upper quadrant pain, fever, jaundice, hypotension, and mental status changes (delirium, anxiety, and coma)
- Nausea and/or vomiting
- Right upper quadrant tenderness (mild to moderate)

## 1600. Hernia common in children

a) Umbilical

b) Bockdelac

c) Morgagni

d) Inguinal

Correct Answer - A
**Answer- A. Umbilical**
"Congenital umbilical hernias represent the most common abdominal wall defect in infant and children".
The incidence of umblical hernias is 5-10% in white children and may be as high as 25-50% in black children.

## 1601. Gangrene not caused by

a) Frost bite

b) Burger's disease

c) Varicose veins

d) Atherosclerosis

Correct Answer - C
**Answer- C. Varicose veins**
**Important causes of gangrene**

- Diabetes
- PVD (Buerger's disease)
- Trauma
- Obesity
- Atherosclerosis
- Raynaud's disease
- Frostibite

## 1602. Bilateral breast carcinoma

a) Invasive lobular

b) Infiltractive ductal

c) Ductal ca in situ

d) None

Correct Answer - A
**Answer- A. Invasive lobular**
Lobular carcinoma (invasive) is frequently bilateral.
Histologic hallmark : pattern of single infiltrating tumor cells often only one cell in width or in loose clusters or sheets.
Signet ring cells common. Lobular carcinoma have a different pattern of metastasis compared to other breast cancers.

## 1603. Most common conotruncal anomaly

a) TGA

b) Tetralogy of fallot

c) Truncus arteriosus

d) Double oulet right ventricle

Correct Answer - A
**Answer- A. TGA**
Conotruncal defects are abnormalities of outflow tract septation or ectomesenchymal tissue migration abnormalities.
Most common conotructal defect is transposition of great arteries (TGA).

## 1604. Fallot physiology includes all except

a) TOF

b) Eisenmenger complex

c) TGA

d) Tricuspid atresia

Correct Answer - B
**Answer- B. Eisenmenger complex**
**These includes**
1. TOF
2. Single ventricle with PS
3. TGA with VSD & PS
4. Corrected TGA with VSD & PS
5. TA
6. Double outlet right ventricle with PS

## 1605. True about Ebstein anomaly is?

a) Right ventricular dilatation

b) Right atrial dilatation

c) Left ventricular dilatation

d) Left atrial dilatation

Correct Answer - B
Ans. is 'b' i.e., Right atrial dilatation
**Ebstein's anomaly**

- Ebstein anomaly consists of downward displacement of an abnormal tricuspid valve into the right ventricle. o Normally tricuspid valve has three leaflets Anterior, posterior and septal.
- Fixed end of these leaflets is attached to valve ring in tricuspid area.
- In Ebstein anomaly, anterior leaflet is attached to valve ring as normal, but the other two leaflets (posterior and septal) are displaced downward and are attached to the wall of left ventricle.
- The portion of right ventricle above he tricuspid valve becomes a part of right atrium —÷ *atrialized right ventricle.* Hemodynamics
- The tricuspid valve anomaly results in obstruction of blood flow as well as regurgitation of blood from the right ventricle into the right atrium → Dilatation and hypertrophy of right atrium due to volume overload.
- Blood flows right atrium to left atrium through patent foramen ovale or ASD → Right to left shunt and cyanosis. Clinical manifestations

1. Cyanosis → Fatigue
2. Dyspnea on exertion → Paroxysmal attacks of tachycardia Signs
3. Cyanosis and clubbing → S., wider split but variable
4. Dominant V wave on JVP. → Right ventricular S3
5. Systolic thrill at the left sternal border → Right atrial S4.

**$S_i$ normal**

- Systolic murmur due to regurgitation at tricuspid valve.
- Delayed diastolic murmur due to obstruction at tricuspid valve like tricuspid stenosis.
- Both systolic and diastolic murmur produced at the tricuspid valve have scratchy character like pericardial friction rib.

## 1606. Most common ASD is ?

a) Ostium primum

b) Patent foramen ovale

c) Ostium secondum

d) Sinus venosus

Correct Answer - C
Ans. is 'c' i.e., Osteum secondum
**ASD can occur in any portion of atrial septum -**

- Secundum
- Primum
- Sinus venosus
- Absent atrial septum (leads to single atrium)
- Ostium secondum defect
- Defect in region of fossa ovalis
- Most common form of ASD

## 1607. Most common cardio vascular abnormality in down syndrome is ?

a) VSD

b) Endocardial cushion defect

c) TOF

d) COA

Correct Answer - B

Ans. is 'b' i.e., Endocardial cushion defect

- About 40% of down syndrome have CHD.
- Endocardial cushion Atrio ventricular septal defect account for 40-60% of cases.
- Other feature in down syndrome.
- Hypotonia, flat face, upward and slanted palpebral fissures and epicanthic folds, speckled irises (Brushfield spot);varying degrees of mental and growth retardation;dysplasia of the pelvis, cardiac malformations, and simian crease;short, broad hands, hypoplasia of middle phalanx of 5th finger, duodenal atresia, and high arched palate;5% of patients with Down syndrome are the result of a translocation-t(14q21q), t(15q21q), and t(13q21q)-in which the phenotype is the same as trisomy 21.

**Other feature ?**

1. Duodenal atresia
2. Annular pancreas
3. Tracheoesophageal fistula
4. Hirschsprung disease
5. Short stature
6. Short sternum
7. Brachycephaly

3. Delayed fontanel closure
9. Three fontanels
0. Frontal sinus hypoplasia
1. Peripheral joint laxity
2. Atlantoaxial instability (C1-C2 subluxation)
3. Exaggerated space between
4. Mottled skin in infancy
5. Dry coarse skin in adolescence 1st and 2nd toes

**Increased Risk for Development of -**

- Leukemia:AML, ALL
- Myelodysplasia
- Transient lymphoproliferative syndrome
- Celiac disease
- Hypothyroidism
- Diabetes mellitus
- Obesity
- Refractive errors
- Strabismus
- Mitral valve prolapse
- Conductive and/or
- Obstructive sleep apnea
- Epilepsy sensorineural hearing loss
- ADHD
- Alzheimer disease
- Conduct oppositional disorders

## 1608. Figure of 8 in chest X-ray ?

a) Supracardiac TAPVC

b) Tetralogy of fallot

c) TGA

d) None of above

Correct Answer - A
Ans. is 'a' Supracardiac TAPVC

- Tertralogy of fallot—* boot shaped heart
- Transposition of great vessel-* egg on side
- TPVC (supracardioe) --> snownan or figure of 8 configuration

## 1609. Large PDA leads to ?

a) Endocardial valvulitis

b) Eisenmenger syndrome

c) CHF

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of above
**Patent ductus arteriosus (PDA)**

- Small PDA may not cause any complication but large defect if untread may leads to :
- Pulmonary hypertension Left to Right shunt leads to too much circulation of blood in lung which leads to pulmonary hypertension.
- Eisenmenger's syndrome - Large standing pulmonary hypertension leads to permanent lung damage and causes Right to Left shunt.
- Endocarditis.
- Arrhythmia Enlargement of heart due to PDA increase risk of arrhythmias

## 1610. Drug used in congenital heart disease to keep PDA patent

a) $PGE_i$

b) PGE2

c) $PGI_2$

d) Indomethacin

Correct Answer - A
Ans. is 'a' i.e., PGE,

- Prostaglandin El (PGE1) infusion usually effective in keeping the ductus arteriosus open before surgical intervention to reduce hypoxemia and acidemia before surgery in ductus dependent lesion like.
- Pulmonary atresia
- TOF with severe PS
- TOF with pulmonary atresia
- Transposition of great arteries with VSD and PS
- Indomethacin is used for ductal closure

## 1611. PDA true is all except ?

a) More common in preterm baby

b) Left to right shunt

c) Acyanotic congenital heart disease

d) More common in term baby

Correct Answer - D
Ans. is 'd i.e., More common in term baby

- During fetal life, most of the pulmonary arterial blood is shunted through the ductus arteriosus into the aorta .
- Functional closure of the ductus normally occurs soon after birth, but if the ductus remains patent when pulmonary vascular resistance falls, aortic blood is shunted into the pulmonary artery.
- The aortic end of the ductus is just distal to the origin of the left subclavian artery, and the ductus enters the pulmonary artery at its bifurcation
- Female patients with PDA outnumber males 2 : 1.
- PDA is also associated with maternal rubella infection during early pregnancy.
- It is a common problem in premature infants, where it can cause severe hemodynamic derangements and several major sequelae

## 1612. Pulmonary plethora is seen with - all except

a) TGA

b) Hypoplastic left heart syndrome

c) Ebstein anomalis

d) Double outlet right ventricle

Correct Answer - C
**Answer- C. Ebstein anomalis**
Pulmonary oligamia
TOF
TA
Ebstein's anomaly
Pulmonary atresia

## 1613. Major criteria for rheumatic fever - AJE

a) Carditis

b) Arthralgia

c) Erythema marginatum

d) Subcutaneous nodule

Correct Answer - B
Ans. is 'b' i.e., Arthralgia
Jone's criteria
Major criteria are : *Carditis, arthritis, subcutaneous natule, chorea, and erythema marginatum*

## 1614. Not included in modified Jones criteria?

a) Polyarthalgia

b) Carditis

c) Chorea

d) Erythema marginatum

Correct Answer - A
Ans. is 'a' i.e., Polyarthalgia

- All the given options are included in modified Jones criteria. Carditis, *chorea and erythema marginatum are major criteria.* Only polyarthralgia (arthralgia) is minor criterian.

## 1615. Most common cardiac defect in Turner syndrome

a) Coartaction of aorta

b) VSD

c) ASD

d) TOF

Correct Answer - A
Ans. is 'a' i.e., Coartaction of aorta
**Disorders Associated with Turner Syndrome**

- Short stature
- Congenital lymphedema
- Horseshoe kidney
- Patella dislocation
- Increased carrying angle of elbow
- Madelung deformity (chondrodysplasia of distal radial epiphysis)
- Congenital hip dislocation
- Scoliosis
- Widespread nipples
- Shield chest
- Redundant nuchal skin (in utero cystic hygroma)
- Low posterior hairline
- Coarctation of aorta
- Bicuspid aortic valve
- Cardiac conduction abnormalities
- Hypoplastic left heart syndrome
- Gonadal dysgenesis (infertility, primary amenorrhea)
- Gonadoblastoma (if Y chromosome material present)
- Learning disabilities (nonverbal perceptual motor and visuospatial

skills) [in 70%]
- Developmental delay (in 10%)
- Social awkwardness
- Hypothyroidism (acquired in 15-30%)
- Type 2 diabetes mellitus (insulin resistance)
- Strabismus
- Cataract
- Red-green colorblindness (as in males)
- Recurrent otitis media
- Sensorineural hearing loss
- Inflammatory bowel disease
- Celiac disease

## 1616. Most common cause of acquired heart disease in children

a) Acute rheuamatic fever

b) Kawasaki

c) Takayasu

d) Diabetes

Correct Answer - A
Ans. is 'a' i.e., Acute Rheumatic fever
**Acute rheumatic fever**

- *M*ost common cause of acquired heart disease in children.
- Caused by group A f3 hemolytic streptococci
- Usually seen in school going children
- Jones criteria = very impotrant
- Mitral valve most common followed by aortic valve
- In acute phase - MR seen
- In RI-ID MS seen

## 1617. Single umblical artery is associated with?

a) NTD

b) Hydrops fetalis

c) Congenital heart disease

d) In utero death

Correct Answer - C

Ans. is `c'i.e., Congenital heart disease

- Approximately 30% of infants with a single umbilical artery have congenital abnormalities.
- Trisomy 18 is one of the more frequent abnormalities.
- The most common congenital anomalies in chromosomally normal fetuses and neonates were.
- Genitourinary (6.48%)
- Cardiovascular (6.25%)
- Musculoskeletal (5.44%).

## 1618. Not a finding in potter syndrome?

a) Bilateral renal agenesis

b) Polyhydromnios

c) Pulmonary Hyperplasia

d) Flat chain

Correct Answer - B
Ans. is 'b' i.e., Poly hydromnios
**Potter syndrome**

- Bilateral renal agenesis is incompatible with extrauterine life and is termed Potter syndrome.
- Death occurs shortly after birth from pulmonary hypoplasia.
- The newborn has a characteristic facial appearance, termed Potter facies. The eyes are widely separated withepicanthic folds, the ears are low set, the nose is broad and compressed flat, the chin is receding, and there arelimb anomalies.
- Bilateral renal agenesis should be suspected when maternal ultrasonography demonstrates oligohydramnios,nonvisualization of the bladder, and absent kidneys.

## 1619. Sitting without support is appear at which month

a) 5 month

b) 6 month

c) 7 month

d) 8 month

Correct Answer - B
Ans. is 'b' i.e., 6 month

| | |
|---|---|
| 3 month | Neck holding |
| 5 month | Roll over |
| 6 month | Sits in tripod position |
| 8 month | Sitting without support |
| 9 month | Stand with support |

## 1620. Child knows his/her sex by age of?

a) 2 year

b) 3 year

c) 4 year

d) 5 year

Correct Answer - B
Ans. is 'b' i.e., 3 year
Rides tricycle
Stands momentarily on one foot.
Draws a circle
Can dress or undress himself completely
Builds tower of 10 cubes
Knows his age and sex.
Repeat a sentence of 6 syllables
Has a vocabulary of 250 words.
Counts 3 objects correctly.
Can withhold and postpone bowel movement.

## 1621. Handedness develops by age of?

a) 2 years

b) 3 years

c) 4 years

d) 5 years

Correct Answer - B
Ans. is 'b' i.e., 3 year

- Handedness is usually established by the 3rd yr. Frustration may result from attempts to change children's hand preference. Variations in fine motor development reflect both individual proclivities and different opportunities for learning. Children who are seldom allowed to use crayons, for example, develop a mature pencil grasp later

## 1622. 10 month old child can not perform?

a) Standing with support

b) Pincer group

c) Walking with suppor

d) Two words with meaning

Correct Answer - D
Ans. is 'd' i.e., Two words with meaning
o A child can transfer the objects from one hand to another by 5-7 months.
o A child can build a tower of 6 cubes by 21 months
o A child can pull himself up by the age of 10 months.
o A child makes a simple sentence first time by the age of 2 years.
o Pincer grasp develops by 9 months.

**1623. mental retardation can be proved if delayed milestones and slow or retarded growth seen upto which age (in year)?**

a) 12

b) 16

c) 18

d) 20

Correct Answer - C
Ans. is 'c' i.e., 18 year
*a) Significantly sub-average intellectual functioning:an IQ score of* 70 *or below on an individually administered IQ test (for infants, a clinical judgment of significantly sub-average intellectual functioning).*

## 1624. Height of child acquire 100 cm in?

a) 2.5 year

b) 3.5 year

c) 4.5 year

d) 5.5 year

Correct Answer - C
Ans. is 'c' i.e., 4.5 year
1 Year- 75 cm
2 Year- 90 cm
4 1/2 Year- 100 cm

## 1625. Swallowing breathing reflex - not seen in fetus for ?

a) 14 weeks

b) 12 weeks

c) 16 weeks

d) Appear in all above period

Correct Answer - B
Ans. is 'b' i.e., 12 weeks
**Behavioural deveopment in intrauterine life**

- Muscle contractions first appear around 8 wk, soon followed by lateral flexion movements.
- By 13-14 wk, breathing and swallowing motions appear and tactile stimulation elicits graceful movements. o The grasp reflex appears at 17 wk and is well developed by 27 wk.
- Eye opening occurs around 26 wk.
- During the 3rd trimester, fetuses respond to external stimuli with heart rate elevation and body movements

## 1626. Characteristics of SMR-2 in boys ?

a) Appearance of pubic hair

b) Appearance of axillary hair

c) Enlargement of scrotum

d) All of above

Correct Answer - C
Ans. is 'c' i.e., Enlargement of scrotum
Scanty & long pubic hair appear at SMR-2. Enlargement of scrotum is there at SMR-2.

## 1627. First sign of puberty in female ?

a) Tanner stage I

b) Tanner stage II

c) Pubic hair

d) Axillary hair

Correct Answer - B
Ans. is `b' i.e., Tanner stage 11
**Thelarche- first sign of puberty in Girl around age of 10 year in Girl**

- Definition :- Begining of secondary (Post natal) breast development at onset of puberty in girls.
- Tanner stage 2 breast development.
- Because of rising level of estradiol
- Breast development during puberty in male termed as gynecomastia not thelarche.

## 1628. In marasmus wasting is due to ?

a) Prolonge dietery deficiency of calori

b) Prolonge dietery deficiency of protein

c) Excess catabolism of fat & muscle mass to provide energy

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of above
**Marasmus**

- Prolonge deficiency of calory & protein due to starvation.
- Monkey facies- loss of buccal fat.
- Baggy pants appearance- loose skin of the buttocks hanging down.
- Loss of axillary fat.
- Appetite is preserved.
- No edema.

## 1629. Kwashiorkor not true is?

a) Apathy

b) Flaky paint dermatosis

c) Increased transaminase

d) Voracious appetit

Correct Answer - D
Ans. is 'd' i.e., Voracious appetite

- There is decreased appetite in kwasiorkor (not varacious appetite). Kwashiorkar
- Kwashiorkar represents the uncompensated phase of PEM.
It is characterized by classical 'triad' of edema (Due to hypoalbuminemia), markedly retarded growth, and psychomotor (mental) changes

## 1630. Acute malnutrition in a child is clinically assessed by:
***September 2005***

a) Body mass index

b) Weight for age

c) Height for age

d) Weight for height

Correct Answer - D
Ans. D: Weight for height
An indicator known as weight-for-height is used to determine whether a child is acutely malnourished or not. The child's weight is compared to the 'normal' weight for that height.
Based on this information, the World Health Organisation (WHO) has developed charts known as international standards for expected growth.
If a child's weight falls within the range considered normal for his/her height, the child is found to be well-nourished. If the weight is less than the international standards, the child is considered acutely malnourished or wasted. WHO has created cut-off points to indicate the severity of the malnutrition.
If a child's weight-for-height is less than -2 z-scores (or standard deviations) of normal children, s/he is considered to suffer from moderate acute malnutrition or wasting.
If the child's weight-for-height is less than -3 z-scores (standard deviations) of normal children s/he suffers from severe acute malnutrition and is considered to be severely wasted.
Another measurement used to determine a child's nutritional status is the mid-upper arm circumference (MUAC) measurement.

is the mid-upper arm circumference (MUAC) measurement.
Because MUAC measurements require a simple, colour-coded measuring band rather than weighing scales and height boards, they are often used during crisis situations.
Useful for children between six months and five years of age, a MUAC measurement of less than 12.5 cm indicates that a child is suffering from moderate acute malnutrition.
If the MUAC measurement is under 11.0 cm, however, the under-five child's life may be in danger as he or she is suffering from severe acute malnutrition.
Although no anthropometric measure is a perfect marker of acute malnutrition, in the past, there has been a tendency to view W/H measures as the gold-standard anthropometric measure to diagnose acute malnutrition in emergencies. Discrepancies between MUAC and W/H have therefore been explained by MUAC being a poor indicator of nutritional status.
A third way of diagnosing acute malnutrition is by testing for the presence of oedema.
Oedema affects a child's appearance, giving him or her a puffy, swollen look in either lower limbs and feet or face.
It can be detected by small pits or indentations remaining in the child's lower ankles or feet, after pressing lightly with the thumbs.

The presence of oedema in both feet and lower legs is always considered a sign of severe acute malnutrition.

**1631. 3 year old child with normal height for age, abnormal weight for age and abnormal weight for height, what It is not be?**

a) Acute malnutrition

b) Chronic Malnutrition

c) Acute on chronic

d) None of above

Correct Answer - B

Ans. is 'b' i.e., Chronic malnutrition

- For this purpose wasting and stunting are measured :-

i) Wasting (deficit in weight for height) 4 Acute malnutrition.

ii) Stunting (deficit in height for age) - Chronic malnutrition.

iii) Wasting and stunting - Acute on chronic malnutrition.

## 1632. Pigmentation and growth retardation is seen in?

a) Zinc deficiency

b) Riboflavin deficiency

c) Niacin deficiency

d) Vit A deficiency

Correct Answer - A
Ans. is 'a' i.e., Zinc dificiency

Dwarfism (growth retardation)
Diarrhea
Dermatitis
Hepatosplenomegaly
Iron deficiency anemia
Acrodermatitis enteropathica
Hyperpigmentation

## 1633. Keshan disease in due to deficiency of

a) Selenium

b) Copper

c) Zinc

d) Iron

Correct Answer - A
Ans. 'a' Selenium
Selenium is required for the synthesis of the amino acid selenocysteine. Selenocysteine is present at the active site of several human enzymes that catalyze redox reactions. Impairments in human selenoproteins have been implicated in tumorigenesis and atherosclerosis, and are associated with selenium deficiency cardiomyopathy (Keshan disease)

## 1634. Weight of child is 70% of normal according to IAP classification, categorised in ?

a) Mild

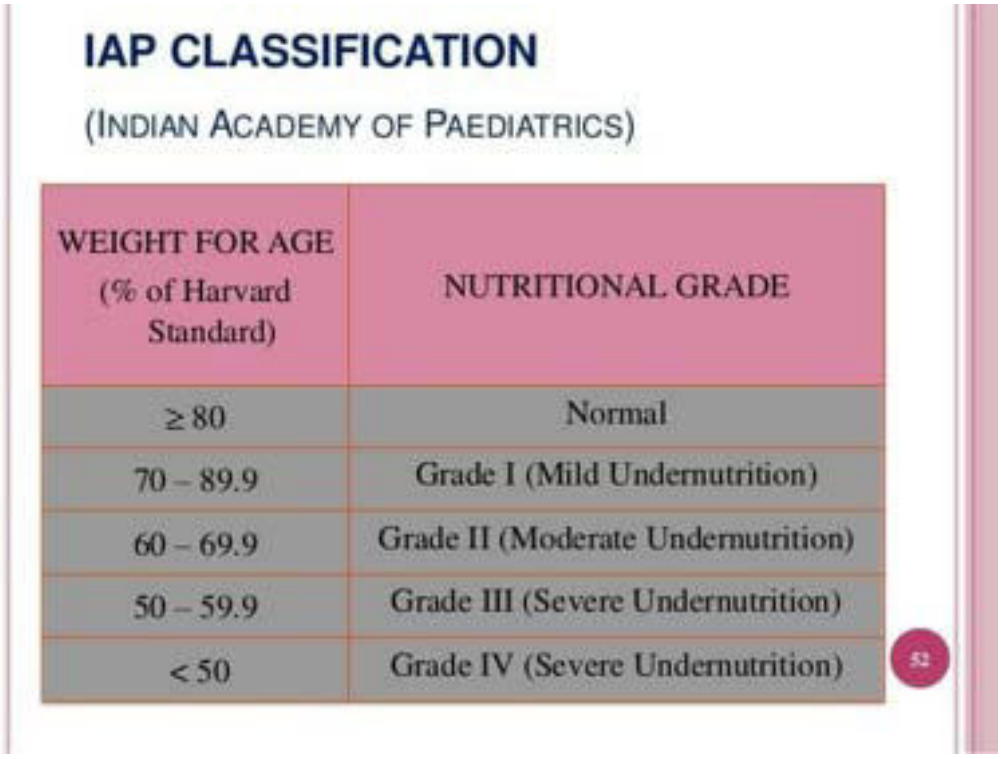
b) Moderate

c) Severe

d) Normal

Correct Answer - B

Ans. is `b' i.e., Moderate



**IAP CLASSIFICATION**

(INDIAN ACADEMY OF PAEDIATRICS)

| WEIGHT FOR AGE (% of Harvard Standard) | NUTRITIONAL GRADE |
|---|---|
| ≥ 80 | Normal |
| 70 – 89.9 | Grade I (Mild Undernutrition) |
| 60 – 69.9 | Grade II (Moderate Undernutrition) |
| 50 – 59.9 | Grade III (Severe Undernutrition) |
| < 50 | Grade IV (Severe Undernutrition) |

## 1635. Most common cause of lower respiratory tract infection in 3 year old child is

a) Klebsella

b) H-influenza

c) Streptococcal pneumonia

d) Staphe aureus

Correct Answer - C
Ans. is 'c' i.e., Streptococcal pneumonia

- *Most common cause of paediatric pneumonia is respiratory syncytial virus (RSV).* Other viruses causing pneumonia are *influenza virus (2^d most common virus),* adenovirus, rhinovirus, and parainfluenza virus.
- *Most common bacterial cause of pediatric pneumonia is streptococus pneumoniae (pneumococcus).* Bacteria causing atypical pneumonia commonly are *mycoplasma and chlamydia.*

## 1636. False regarding croup is ?

a) Disease include epiglottis, laryngitis, laryngotrachictis

b) Brassy cough is main presenting feature

c) Causes upper airway obstruction

d) All of above

Correct Answer - C

Ans. is 'c' i.e., Causes upper airway obstruction

- Croup is variety of condition which include acute epiglottis, laryngitis, trachiobronchitis.
- Infection of lower respiratory tract.
- Brassy cough main presenting feature.
- Treatment
- Humidified
- I.V. fluid
- Antibiotics
- Nebulisation
- Steroid.

## 1637. Koplik spot true is ?

a) Pathognomic of measls

b) Present on buccal mucosa opposite P' molar

c) Always present

d) All of above

Correct Answer - A
Ans. is 'a' i.e., Pathognomic of measls
**Measle**

- Caused by RNA virus.
- Highly contagious droplet spread from secretion of nose and throat 4 day before and 5 days after rash.
- Secondary attack rate >90% in contact.
- Prodromal phase - characterized by fever, rhinorrhea, conjuctival congestion and dry hackig cough.
- Koplik spots-bluish-gray specks or "grains of sand" on a red base-develop on the buccal mucosa opposite the second molars
- Generally appear 1-2 days before the rash and last 3-5 days
- Pathognomonic for measles, but not always present
- Rash appears on D4 first behind pinna on neck the spread of face, thrunk and abdomen.
- SSPE is long term complication seen in measls.

## 1638. Post term baby with tachypnea - commonest cause?

a) Transient tachypnea of newborn

b) Meconium aspiration syndrome

c) Hyaline membrane disease

d) Infection

Correct Answer - B

Ans. is 'b' i.e., meconium aspiration syndrome

**Transient Tachypnea of the Newborn**

- *Tr*ansient tachypnea of the newborn is the most common cause of neonatal respiratory distress, constituting more than 40 percent of cases.1
- A benign condition, it occurs when residual pulmonary fluid remains in fetal lung tissue after delivery o Respiratory Distress Syndrome
- Respiratory distress syndrome of the newborn, also called hyaline membrane disease, is the most common cause of respiratory distress in premature infants
- Immature type II alveolar cells produce less surfactant, causing an increase in alveolar surface tension and a decrease in compliant
- Meconium Aspiration Syndrome
- Meconium-stained amniotic fluid occurs in approximately 15 percent of deliveries, causing meconium aspiration syndrome in the infant in 10 to 15 percent of those cases, typically in term and post-term infants

**Infection**

- Bacterial infection is another possible cause of neonatal respiratory distress.
- Common pathogens include group B streptococci (GBS),

Staphylococcus aureus, Streptococcus pneumoniae, and gram-negative enteric rods.

- Pneumonia and sepsis have various manifestations, including the typical signs of distress as well as temperature instability

## 1639. Influenza vaccine cause ?

a) Local swelling

b) Fever

c) Itching

d) All of above

Correct Answer - D
Ans. is 'd'  i.e., All of above
**Mild problems following inactivated flu vaccine:**

- Soreness, redness, or swelling where the shot was given
- Hoarseness
- Sore, red or itchy eyes
- Cough
- Fever
- Aches
- Headache
- Itching
- Fatigue
- If these problems occur, they usually begin soon after the shot and last 1 or 2 days.

**Moderate problems following inactivated flu vaccine:**

- Young children who get inactivated flu vaccine and pneumococcal vaccine (PCV13) at the same time may be at increased risk for seizures caused by fever. Ask your doctor for more information. Tell your doctor if a child who is getting flu vaccine has ever had a seizure.

**Problems that could happen after any vaccine:**

- Brief fainting spells can happen after any medical procedure, including vaccination. Sitting or lying down for about 15 minutes can

help prevent fainting, and injuries caused by a fall. Tell your doctor if you feel dizzy, or have vision changes or ringing in the ears.

- Severe shoulder pain and reduced range of motion in the arm where a shot was given can happen, very rarely, after a vaccination.
- Severe allergic reactions from a vaccine are very rare, estimated at less than 1 in a million doses. If one were to occur, it would usually be within a few minutes to a few hours after the vaccination.

## 1640. Child with rash- wrong is

a) Typhus - day 5

b) Varicella - day 1

c) Typhoid - day 5

d) Measles - day 4

Correct Answer - C
**Answer- C. Typhoid - day 5**
**Very Sick Person Must Take Double Tablets**

- Very Varicella (day 1)
- Sick  Scarlet fever (day 2)
- Person Pox-small pox (day 3)
- Must  Measles (day 4)
- Take  Typhus (day 5)
- Double Dengue (day 6)
- Tablets Typhoid (day 7)

## 1641. Infant has fever, one episode of febrile convulsions admitted for observation, fever than subsided and followed by rash on abdomen & chest, maculo-papular erythematous-what is the cause?

a) Chickenpox

b) Measles

c) Typhoid

d) Dengue

Correct Answer - A

Ans. is 'a' i.e., Chickenpox

- In this question, infant had develop rash on first day offever & distribution of rash is in favour of chickenpox, or varicella.
- Mnemonic for Day of appearance of rash in a febrile patient is **Very Sick Person Must Take Double Tablets**
- Very - Varicella (day 1)
- Sick - Scarlet fever (day 2)
- Person - Pox-small pox (day 3)
- Must - Measles (day 4)
- Take - Typhus (day 5)
- Double - Dengue (day 6)
- Tablets - Typhoid (day 7)

**Chicken pox (Varicella ):**

- Caused by virus
- Child develop fever with rash

- Rash are macular, maculo-papular, vesicular (pleomorphic)
- Distribution is usually centripetal
- Complication include - more seen in immunocompromised child.

a. Mild thrombocytopenia
b. Hematurea
c. GI Bledding
d. Encephalitis
e. Pneumonia

## 1642. True about foremilk & hind milk?

a) Foremilk has fat

b) Hind milk relieve hunger

c) Fore milk relieve hunger

d) Hind milk is rich in protein

Correct Answer - B
Ans. is 'b' i.e., Hind milk relive hunger
*The foremilk (the milk "in front"); is produced at the beginning of each feeding. It contains water, vitamins, and protein and relieve thurst.*
*The hindmilk ; is pushed out latter, it is heavier, richer in lipid and satisfy hunger.*

## 1643. Most common GI malignancy of childhood

a) Adenocarcinoma

b) Lymphoma

c) Sarcoma

d) carcinoid

Correct Answer - B
Ans. is 'b' i.e., Lymphoma

- Over all hemangioma is most common Tumor in infant.
- Hemangioma is usually benign in Nature.
- Leukemia is most common malignancy in pediatric age gyp.
- 2''' most common is CNS Tumor = Lymphoma is the most common malignancy of the gastrointestinal tract in children. About 30% of children with non-Hodgkin lymphoma present with abdominal tumors.

## 1644. Most common intra abdominal solid organ tumor in child is ?

a) Neuroblastoma

b) Rhabdomyoblastoma

c) Wilm's tumor

d) Hypernephroma

Correct Answer - A
Ans. is 'a' i.e., Neuro blastoma

- Most common abdominal cancer of childhood.
- Most common cancer of infancy.
- *Most common extracranial solid tumor of childhood* (most common solid tumor of childhood is brain tumor).

## 1645. Most common malignancy in children is ?

a) ALL

b) AML

c) Neuroblastoma

d) Wilm's tumor

Correct Answer - A
Ans. is 'a' i.e., ALL

- Leukemia is most common malignancy in pediatric age group. o Leukemia / lymphoma = 40% (ALL is more common than AML)
- CNS Tumor= 30%
- Embryonal & Sarcoma =10%
- 2nd most common is CNS Tumor (30%)

## 1646. Pedigree analysis chart?

a) Used for growth monitoring

b) To assess side effect during chemotherapy

c) Used to see gentic transmission

d) To assess developmental delay in infant

Correct Answer - C
Ans. is 'c' i.e., Used to see genetic transmission
Pedigree

- Provide graphic depiction of a family structure medical history.
- Person providing information is formed as **proband.**
- Special symbol is used for each designation.
- Three generation pedigree should be made.
- Closer the relationship of proband to the person, greater is change of shared genetic component.

## 1647. Prader willi syndrome, chromosomal defect?

a) Chromosome 15

b) Chromosome 5

c) Chromosome 10

d) Chromosome 21

Correct Answer - A
Ans. is 'a' i.e., Chromosome 15

- Prader-Willi syndrome is a complex genetic condition that affects many parts of the body.
- In infancy, this condition is characterized by weak muscle tone (hypotonia), feeding difficulties, poor growth, and delayed development. Beginning in childhood, affected individuals develop an insatiable appetite, which leads to chronic overeating (hyperphagia) and obesity.
- Some people with Prader-Willi syndrome, particularly those with obesity, also develop type 2 diabetes mellitus (the most common form of diabetes).
- People with Prader-Willi syndrome typically have mild to moderate intellectual impairment and learning disabilities. o Behavioral problems are common, including temper outbursts, stubbornness, and compulsive behavior such as picking at the skin. Sleep abnormalities can also occur.
- Additional features of this condition include distinctive facial features such as a narrow forehead, almond-shaped eyes, and a triangular mouth; short stature; and small hands and feet. Some people with Prader-Willi syndrome have unusually fair skin and light-colored hair.
- Both affected males and affected females have underdeveloped

genitals. Puberty is delayed or incomplete, and most affected individuals are unable to have children (infertile).

## 1648. Hemophilia X-linked?

a) Hemophilia A

b) Hemophilia B

c) Hemophilia C

d) Both A & B

Correct Answer - D
Ans. is 'D' i.e., Both a & b

- Hemophilia A (also known as classic hemophilia or factor VIII deficiency) and hemophilia B (also known as Christmas disease or factor IX deficiency) are inherited in an X-linked recessive pattern.
- Haemophilia C is caused by a deficiency of coagulation factor XI and is distinguished from haemophilia A and B by the fact it does not lead to bleeding into the joints. Furthermore, it has autosomal recessive inheritance

## 1649. Turner syndrome - karyotyping is?

a) 45, X0

b) 46 X0

c) 47 XXX

d) Trisomy 21

Correct Answer - A
Ans. is 'a' i.e., 45 XO

- *4*5X0
- Lymphadema of dorsum of hand & fat
- Loose skin fold at nape of neck
- Short stature
- Short Neck (with webbing of neck)
- Anomalies ear
- Broad shield like chest with widely spaced small nipple
- Renal anomalies (Horse-shoe, souble or cleft renal pelvis)
- Coart of aorta

## 1650. 21-Hydroxylase deficiency - false is ?

a) Most common cause of congenital adrenal hyperlasia

b) Autosomal recessive

c) Femal pseudo hermaphroditism

d) Male pseudo hermephroditism

Correct Answer - D
Ans. is 'd' i.e., Male pseudo hermephroditism
**<u>Congenital adrenal hvperplasia (CAH)</u>**

- Group of AR disorder
- MC adrenal disorder in childhood
- Most common 21-hydroxylase deficiency =There is elevated level of pregenolone, 17 -OH pergenelone DHEA and decreas level of progesterone, deoxycortisol,and estradiol so 21 hydroxylase deficiency causes female pseudohermaphroditism.

## 1651. In congenital adrenal hyperplasia precocious puberty in male is due to ?

a) 21 alpha hydroxylase deficiency

b) 11(3 hydroxylase deficiency)

c) Both

d) None

Correct Answer - C
Ans. is 'c' i.e., Both
21 hydroxylase and 3-13-HSD
• Salt losing
• Virilization of female (Female pseudohermaphroditism)
• Precocious puberty in male

## 1652. Precocious puberty is seen in -

a) Hypothyroidism

b) CNS irridation

c) Mc cune-Albright syndrome

d) All

Correct Answer - D
Ans. is 'a' i.e., Hypothyroidism; 'b' i.e., CNS irradiation; 'c' i.e., Mc Cune Albright syndrome
**Precocious puberty**
o Puberty before the age of 8 years in girls or 9 years in boys is considered precocious puberty. o Menarche before the age of 10 years in girls is also considered as precocious.
o Precocious puberty is of two types
1. Central or true precocious puberty
Results from excessive GnRH, gonadotropins and target sex hormone elaborated by premature activation of hypothlamic pituitary-gonadal (HPG) axis.
2. Peripheral or pseudo-precocious puberty
Due to increased sex steroid secretion from either the adrenal gland or the gonads.
It is independent of HPG axis activation
Causes of Precocious puberty
A. Central precocious puberty
*1. Idiopathic :* Sporadic or familial.
*2. Central nervous system abnormalities*
i) Congenital anomalies of CNS: Hypothalamic hamartoma, hydrocephalus, porencephaly, arachnoid cysts.
ii) Acquired lesions of CNS : Inflammation, granuloma, trauma,

surgery, radiation, chemotherapy.
iii) Tumors of CNS : Pineal tumors, optic glioma, ependymoma, camiopharyngioma.
iv) Hypothyroidism
B. Peripheral precocious puberty : Isosexual
***Girls***
*1. Ovarian causes :* McCune-Albright syndrome, benign follicular cysts, granulosa-theca cell tumors; Gonadoblastoma
*2. Adrenal causes :* Feminizing adrenal neoplasia
*3. Exogenous estrogen administration*
***Boys***
*1. Testis :* Leydig cell tumor, adrenal rest tumor, testotoxicosis.
*2. Adrenal:* CAH (21 or 11-(3 hydroxylase deficiency), virilizing tumors.
*3. hCG secreting tumors :* Hepatoma, hepatoblastoma, choriocarcinoma, chorionepithelioma, teratoma, dysgerminoma.
**Exogenous testosterone**
**C. Heterosexual precocity**
*1. Girls :* Virilization in girls due to virilizing CAH, ovarian or adrenal neoplasia, polycystic ovarian disease.
*2. Boys :* Feminization due to estogen producing adrenal tumors, exogenous estrogen, marijuana smoking.
Note - Hypothyroidism usually causes delayed puberty, but juvenile hypothyroidism some times can cause precocious puberty.

## 1653. Delayed puberty in female?

a) No breast budding in 10 years

b) Menarche > 16 year

c) menarche > 1 year of brean budding

d) FSH

Correct Answer - B
Ans. is 'b' i.e., Menarche > 16 year
**Delayed Puberty**

- More common in boy than girl
- Most common cause in constitutional delay

**Girls-Delayed puberty is defined as**

- Lack of secondary sexual character by age of 17 years
- Absence of menarche by age of 16 year
- 5 year after pubertal onset.
- Boys-Lack of pubertal changes by the age of 14 years.

## 1654. Hypergonadotropic hypogonadism is sean in all except?

a) Turner syndrome

b) Down syndrome

c) Klinefelter syndrome

d) Swyer's syndrome

Correct Answer - B
Ans. is 'b' i.e., Down syndrome
**Hypergonadotropic hypogonadism**

- Also K/a primary or peripheral hypogonadism.
- Characterised by hypogonadism due to an impaired response of the gonads to the gonadotropin, FSH and LH.
- In turn a lack of sex steroid production and elevated gonadotropin level.

**Causes :**

- Chromosomal abnormalitis
- Turner's syndrome
- Klinefelter syndrome
- Swyer's syndrome
- Enzyme defect
- 17 , hydroxylase
- 17, 20 lyase deficiency

## 1655. Female hermaphrodite is?

a) Female sexual characterstic with testes

b) Male sexual charaterstic with ovary

c) XY

d) Female sexual characteristic with both testes & ovary

Correct Answer - B
Ans. is 'b' i.e., Male sexual characteristc with ovary
**Female pseudo hermaphroditism**

- Have internal genitalia female type
- Katy() type XX
- Masculinisation of external genitalia
- Most common - CAN

**Congenital adrenal hyperplasia**
M-C. 21 hydroxylase deficiency

- Other cause excess maternal androgen due to - o Maternal ovarian tumor.
- Maternal drug intake
- Treatment
- Hormonal therapy

## 1656. Fanconi's anemia - false is ?

a) Autosomal recessive

b) Pancytopenia

c) Type I RTA

d) All are true

Correct Answer - C
Ans. is 'c' i.e., Type **I** RTA
**Fanconi anemia**

- Autosomal recessive
- Pancytopenia
- Hyper pigmentation of trunk, neck, and inlertriginous area.
- Growth failure
- Fanconi facies (small head, small eyes)
- Renal abormality
- Proximal RTA (type II RTA)

**Renal tubular acidosis 3 types**

- Distal RTA (type I)
- Proximal RTA (type II)
- Hyperkalemic RTA (type IV)

## 1657. Exchange blood transfusion what is used ?

a) Whole blood

b) EPP

c) Serum

d) Pack cell

Correct Answer - A
Ans. is 'a' i.e., Whole blood

- Exchange transfusion is the process of slowly removing patient blood and replacing with fresh donor whole blood.

## 1658. ITP false is ?

a) Plattet transfusion should be avoided

b) Anticedent history of febrile illness

c) Overactive immune system

d) Steroid should be avoided

Correct Answer - D
Ans. is 'd' i.e., Steroid should be avoided
**Idiopathic thrombocytopenic purpura (ITP)**

- Commonest bleeding disorder presenting in children between 1-7 year of age.
- ITP is proposed to be occur due to over active immune response.
- Antecedent H/o febrile illness present.

**Treatment**

- Platlet transfusion should be avoided
- IVIG or steroid.

## 1659. In infant, bone marrow biopsy is done from ?

a) Sternum

b) Iliac crest

c) Tibia

d) All of above

Correct Answer - C
Ans. is 'c' i.e., Tibia
**Sternum : —>**

- Hematopoitically active
- Site in cooperative patient like adult

**Ilium :**

- Apprehesive patient
- Useful in older children & adult

**Tibia :**

- Useful in newborn & infant and children below 2 year of age.

## 1660. Case of hemorrhagic disease of newborn bleed on 2nd day?

a) 2, 7, 9, 10

b) 3, 7, 9, 10

c) 2, 8, 9, 10

d) 2, 5, 9, 10

Correct Answer - A
Ans. is 'a' i.e., 2, 7, 9, 10

- Hemorrhagic disease of newborn is due to deficiency of Vitamin K dependent factors —> II, VII, IX and X.

## 1661. Child having long history of hemoglobin 5 gm% next step?

a) Blood transfusion

b) CBC,reti count with periphesal smear.

c) Start Iron

d) Hb elechophoresis

Correct Answer - B

Ans. is 'b' i.e., CBC,reti count with peripheral smear

- In above question, if child is stable, then no need to give blood transfusion.
- Before starting Iron, we have to rule out types of anemia as Iron is indicated only in nutritioral anemia.
- Hb ele ctrophoresis is indicated if there is featuer of hemolytic anemia (thalassemia) so over all our next step is complete hemogram with manual peripheral smear examination. (obtion b).

## 1662. Mildly elevated bilirubin, normal liver enzymes are seen in?

a) Malaria

b) Thalassemia

c) G-6 PD deficie

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of above

- Mildly elevated bilirubin especially indirect and normal liver enzyme seen in hemolytic anemia.
- In above question all causes hemolytic anemia.

## 1663. Baby '0* positive, blood group, mother Rh negative, cord bilirubin 7 mg%, conjugated I now treatment is?

a) Nothing

b) Stop breast feeding for 48 hours

c) Continue breast feeding and phototherapy

d) Stop breast feed and prepare for exchange blood transfusion

Correct Answer - D

Ans. is 'd' i.e., Stop breast tad and prepare for exchange blood transfusion

· In hemolytic disease, immediate exchange transfusion indication :

a) Cord bilirubin is > 4.5 mg/dl and Hb < 11 gm%

b) Bilirubin rising > 1 mg/dl/hour despite phototherapy

c) Hb level 11-13 gm/dl and bilirubin rising more than 0.5 mg/dl/hour

d) Bilirubin is rising inspite of phototherapy

## 1664. In neonate, intra muscular injection given at -

a) Deltoid

b) Gluteal

c) Thigh

d) Abdomen

Correct Answer - C
**Answer- C. Thigh**
Anterolateral aspect of thigh because of lack of important blood vessel & nerve is preferred site upto 12 month of age.

## 1665. Cat bites in child treatment - false is

a) Cleaning the wound thoroughly

b) Puncture wound most common

c) May require rabies vaccination

d) All of above

Correct Answer - D
Ans. is `d' i.e., All of above

- The most common type of injury from cat and rat bites is a puncture wound. *Cat* bites often penetrate to deep tissue
- Infection is the most common complication of any type of bite injuries.
  - Treatment includes cleansing of wound, debridement, wound culture, tetanus and antirabies immunization, and initiation of antibiotics.
  - A *moxicillin-clavulanate is an excellent choice for empirical oral therapy for human and animal bite wounds because of its activity against most of the strains of bacteria that have been isolated from infected bite injuries.*

## 1666. Most common site of extra - pulmonary TB in children is ?

a) Abdominal

b) Genitourinary

c) Lymphnode

d) Congenital

Correct Answer - C
Ans. is 'c' i.e., Lymphnode

- Most common site of extra pulmonary TB is lymphnode
- Most children who develop tuberculosis disease experience pulmonary manifestations 25 to 35 percent of children have an extrapulmonary presentation.
- The most common extrapulmonary form of tuberculosis is lymphatic disease accounting for about two thirds of cases of extrapulmonary tuberculosis. the second most common form is meningeal disease occurring in 13% of patients

## 1667. Most common organ involved in congenital Tb is?

a) Liver

b) Pancreas

c) Kidney

d) Lung

Correct Answer - A
Ans. is 'a' i.e., Liver
**Congenital tuberculosis**

- Although it is rare as mother having tuberculosis primarily present with infertility.
- Tuberculous bacilli sometimes pass throgh umblical vein and may develop focus in liver (hepatic complex).
- When neonate aspirate amniotic fluid containing bacilli then develop GI tuberculosis or lung infection.
- Neonate usually present as respiratory distress, hepatosplenomegaly lymphadenopathy.
- Overall liver is most commonly involved in congenital tuberculosis

## 1668. Ideal time to start Iron therapy in a marasamic child with fever and hemoglobin 7 gm% is

a) Immedietly

b) At discharge

c) When fever goes down

d) At any time

Correct Answer - C

Ans. is 'c' i.e., When fever goes down

- Iron at 3 mg/kg 1 day should started when child gaining weight once stabilisation phase is over. o The core of the accepted WHO management protocol is 10 steps in two phases ?

.. Stabilization

2. Rehabilitation.

- These 10 essential steps are listed below:

.. Treat/prevent hypoglycemia;

2. Treat/prevent hypothermia;

3. Treat/prevent dehydration;

4. Correct electrolyte imbalance;

5. Treat/prevent infection;

6. Correct micronutrient deficiencies;

7. Start cautious feeding with F-75;

8. Achieve catch-up growth by feeding F-100 after appetite returns;

9. Provide sensory stimulation and emotional support; and

0. Prepare for follow-up after recovery

- F-75 is the "starter" formula used during initial management of malnutrition, beginning as soon as possible and continuing for 2-7

days until the child is stabilized. Severely malnourished children cannot tolerate normal amounts ofprotein and sodium or high amounts offat. They may die i f given too much protein or sodium. They also need glucose, so they must be given a diet that is low in protein and sodium and high in carbohydrate. F-75 has is specially mixed to meet the child's needs without overwhelming the body 's systems in the initial stage of treatment. Use of F-75 prevents deaths. F-75 contains 75 kcal and 0.9 g protein per 100 ml.

- As soon as the child is stabilized on F-75, F-100 is used as a "catch-up" formula to rebuild wasted tissues. F100 contains more calories and protein: 100 kcal and 2.9g protein per 100 ml.

## 1669. Non-obstructive hydrocephalus - true is ?

a) Also kin communicating hydrocephalus

b) Due to obliteration of subarachrod cistemae or malfunction of arachnoid villi

c) Dilatation of all 4 ventricle

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of above

- H hy_LQggPllalus is not a specific disease; rather, it represents a diverse group of conditions that result from impaired circulation and absorption of CSF or, in the rare circumstance, from increased production by a choroid plexus papilloma
- flyLk.QCSPLlalus resulting from obstruction within the ventricular system is called obstructive or noncommunicating hydrocephalus
- The CSF circulates from the basal cisterns posteriorly through the cistern system and over the convexities of the cerebral hemispheres.
- CSF is absorbed primarily by the arachnoid villi through tight junctions of their endothelium by the pressure forces that were noted earlier.
- CSF is absorbed to a much lesser extent by the lymphatic channels directed to the paranasal sinuses, along nerve root sleeves, and by the choroid plexus itself.
- Hydrocephalus resulting from obliteration of the subarachnoid cisterns or malfunction of the arachnoid villi is called nonobstructive or communicating hydrocephalus

## 1670. Febrile seizure most common - age groups?

a) 1 month to 1 year

b) 6 month to 5 year

c) 6 month to 2 year

d) 2 month to 5 year

Correct Answer - B
Ans. is 'b' i.e., 6 month to 5 year
***Febrile convulsion :-***

- Commonest provoked seizure
- Between 6 months to 5 year
- Neurologically normal child
- Occurs when temp rise abruptly

**Simple benign febrile convulsion**

- Fits occur within 24 hour of onset of fever.
- Duration less than 10 min.
- Usually single per febrile episode
- Generalised type of convulsion

**Atypical febrile seizures**

- Presence of family history of epilepsy
- Neurodevelopmental retardation
- Focal neurological deficit.

## 1671. What is recurrence of febrile seizure -

a) 10-20%

b) 20-30%

c) 30-50%

d) 50-70%

Correct Answer - C
**Answer- C. 30-50%**
Recurrent febrile seizures occur in 30-50% of cases.
More than 90% of febrile seizures are generalized.
Acute respiratory illness are most commonly associated with febrile seizures.

## 1672. Drug used for absence seizure?

a) Lamotrigine

b) Carbamazepine

c) Phenytoin

d) Vigabatrine

Correct Answer - A
Ans. is 'a' i.e., Lamotrigine

- *Drug of choice for absence seizures is Valproate (Previously it was ethosuxamide).* Other drugs used are lamotrigine and *clonazepam.*

## 1673. Child comes with blood sugar 32 mg/dl with convulsions Treatment is?

a) 5% dextrose 2 ml/kg

b) 10% dextrose 2 ml/kg bolus

c) 10% dextrose 4 ml/kg

d) 5% Dextrose 4 ml/kg

Correct Answer - C
Ans. is 'c' i.e., 10% Dextrose 4 ml/kg

- *Symtomatic Hypoglycemia (<40mg/d1) should be managed with 10% IV Dextrose.*
- In seizures, dose of 10% dextrose is 4 ml/kg.

## 1674. Minimum interval between 2 live vaccine immunization ?

a) 2 weeks

b) 4 weeks

c) 6 week

d) 8 weeks

Correct Answer - B
Ans. is 'b' i.e., 4 weeks
**Basic principle of immunization**

- Minimum 4 week interval recommended between 2 live vaccine administration except OPV and oral typhoid.
- Two or more killed vaccine may be administrated simultaneously or at any given interval
- A live and killed vaccine given simultaneously but at different site.
- If immunisation status unknown, give age appropriate vaccine
- Mixing of vaccine in same syringe not recommended
- Live vaccine should be avoided in AIDS,

## 1675. A child having H/0 profuse watery diarrhoea not taking oraly and not passed urine since 2 days, what to be given

a) Milk

b) ORS

c) I.V. fluid

d) I.V. antibiotic

Correct Answer - C

Ans. is 'c' i.e., I.V. fluid

- Child having history of profuse watery diarrhoea with poor oral intake and not passed urine since 2 days is suffering from diarrhoea with dehydration and probably acute renal failure of pre renal types.
- Here best choice is intravenous I.V. fluid
- If I.V. access not possible, then you can give feed through Ryle's tube or intra osseous fluid.

## 1676. Fluid of choice in child with burn < 24 hour is

a) Fresh frozen plasma

b) Isolye-P

c) Ringer lactate

d) Platlet tranfusion

Correct Answer - C

Ans. is 'c' i.e., Ringer lactate

**Fluid resuscitation in burn injury**

- Parkland formulaa

a. Initial 24 hours: Ringer's lactated (RL) solution 4 ml/kg/% burn for adults and 3 ml/kg/% burn for children. RL solution is added for maintenance for children:

a. 4 ml/kg/hour for children weighing 0-10 kg

b. 40 ml/hour +2 ml/hour for children weighing 10-20 kg

c. 60 ml/hour + 1 ml/kg/hour for children weighing 20 kg or higher

- This formula recommends no colloid in the initial 24 hours.

b Next 24 hours: Colloids given as 20-60% of calculated plasma volume. No crystalloids. Glucose in water is added in amounts required to maintain a urinary output of 0.5-1 ml/hour in adults and 1 ml/hour in children.

## 1677. Erythroposis starts in fetal liver during ?

a) 2-4 weeks

b) 4-6 weeks

c) 6-8 weeks

d) 8-10 weeks

Correct Answer - C
Ans. is 'c' i.e., 6-8 weeks

- Developmental hematopoiesis occurs in three anatomic stages:?
1. Mesoblastic
2. Hepatic
3. Myeloid

- Mesoblastic hematopoiesis occurs in extraembryonic structures, principally in the yolk sac, and begins between the 10th and 14th days of gestation.
- By 6-8 wk of gestation the liver replaces the yolk sac as the primary site of blood cell production, and by 10-12 wk extraembryonic hematopoiesis has essentially ceased.
- Hepatic hematopoiesis occurs in the liver throughout the remainder of gestation, although production begins to diminish during the second trimester as bone marrow (myeloid) hematopoiesis increases.
- The liver remains the predominant hematopoietic organ through wk 20-24 of gestation

## 1678. Antiendomysial antibody is used in screening of ?

a) Myasthenia gravis

b) Auto immune hepatitis

c) Coeliac diseases

d) Graves disease

Correct Answer - A
Ans. is 'a' i.e., Coeliac diseases

- Coeliac disea.se (CD) is a permanent intolerance of the small intestine to gluten, characterized by gluten-dependent changes in villous morphology and/or signs of immunological activation detectable in the lamina propria of intestinal mucosa.
- The presence of serum anti-endomysial antibodies (EMA) is generally considered to be highly suggestive for CD because of their high values of sensitivity and specificity.
- Other antibodies used for diagnosis
- Tissue transglutaminase,
- Antigliadin antibodies
- Treatment is Gluten-free diet

## 1679. True about bartter's syndrome are all except ?

a) Hyperkalemic alkalosis

b) Presents in neonate with ototoxicity have bartin gene mutation

c) Decreased $K^+$ assorption from thick descending loop

d) Autosomal recessive

Correct Answer - A
Ans. is 'a' i.e., Hyperkalemic alkalosis

- Antibodies in coeliac disease are *anti-endomysian, antigliadin* and *anti-transglutaminase.*

## 1680. Posterior urethral valve - true A/E ?

a) Palpable bladder

b) Hydronephrosis

c) Painful stress incontinence

d) Recurrent UTI

Correct Answer - C
Ans. is `c' i.e., Painful stress incontinence
**Posterior urethral valve**

- Most common cause of severe obstructive uropathy in children.
- 30% of children experienced end stage renal disease/CRF
- Dilated prostatic urethra.
- Hypertrophy of bladder muscle
- Vesicouretic reflux seen in 50% of cases.
- *Back pressure change:*
- Hydronephrosis
- Distended bladder
- Thin urinary stream
- Recurent UTI because of urinary stasis

## 1681. 2 year old boy of weight 12 kg with vitamin A deficiency what is oral dose of vitamin A

a) 50, 000 I.U

b) 1 lakh I.U.

c) 1.5 lakh I.U

d) 2 lakh I.U

Correct Answer - D
Ans.D. 2 lakh I.U
**Treatment:**

- Oral therapy: The oral regimen of vitamin A is 200,000 IU on day of presentation, next day, and 2-4 weeks later.
- Children less than 1 year of age or less than 8 kg should receive half the dose of the above dose. Repeat 200,000 IU every 6 months up to 6 years of age to prevent recurrence.
- Parenteral therapy: If the patient has severe disease, is unable to take oral feeds, or has malabsorption, the preferable dose is 100,000 IU of vitamin A given intramuscularly.
- Children with severe measles should also receive vitamin A as they are very likely to be benefited from such therapy both in terms of saving sight and reducing case fatality.
- Prevention
  **Prophylaxis consists of periodic administration of Vitamin A supplements. WHO recommended schedule, which is universally recommended is as follows:**
- Infants 6–12 months old and any older children weighing less than 8 kg – 100,000 IU orally every 3–6 months

- Children over 1 year and under 6 years of age – 200,000 IU orally every 6 months
- Infants less than 6 months old, who are not being breastfed – 50,000 IU orally should be given before they attain the age of 6 months

## 1682. Alopecia thin brittle nail, sparse hair with thin enamel diagnosis is ?

a) Ectodermal dysplasia

b) Alopecia aerata

c) Alopica congenita

d) None of above

Correct Answer - A
Ans. is 'a' i.e., Ectodermal dysplasia
**Ectodermal dysplasia**

- Group of syndrome
- All derived from ectodemal structure
- Abnormalities of two or more ectodermal structure such as
- Hair
- Teeth
- Nail
- Sweat gland
- Cranio facial structure
- Digit

## 1683. Hair an syndrome is consists of ?

a) Hyperandrogenism

b) Acanthosis nigricans

c) Insulin resistance

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of above

- HAIR-AN syndrome consists of hyperandrogenism (HA), insulin resistance (IR), and acanthosis nigricans (AN).
- It is a subset of polycystic ovary syndrome

**1684. Renal tubuler acidosis with ABG value pH = 7.24 $P0_2$=80; $PaCO_2$= 36 Na = 131; $HCO_3$ = 14 C1= 90; BE = -13 Glucose = 135 above ABG picture suggest ?**

a) Metabolic acidosis

b) Respiratory acidosis

c) Respiratory alkalosis

d) Metabolic alkalosis

Correct Answer - A

Ans. is 'a' i.e., Metabolic acidosis

- The given values have low pH, and low $HCo_2$- Indicate metabolic acidosis
- $PCO_2$ in lower normal range (normal value 35-45 mm/hg)

## 1685. Grimace with APGAR score -

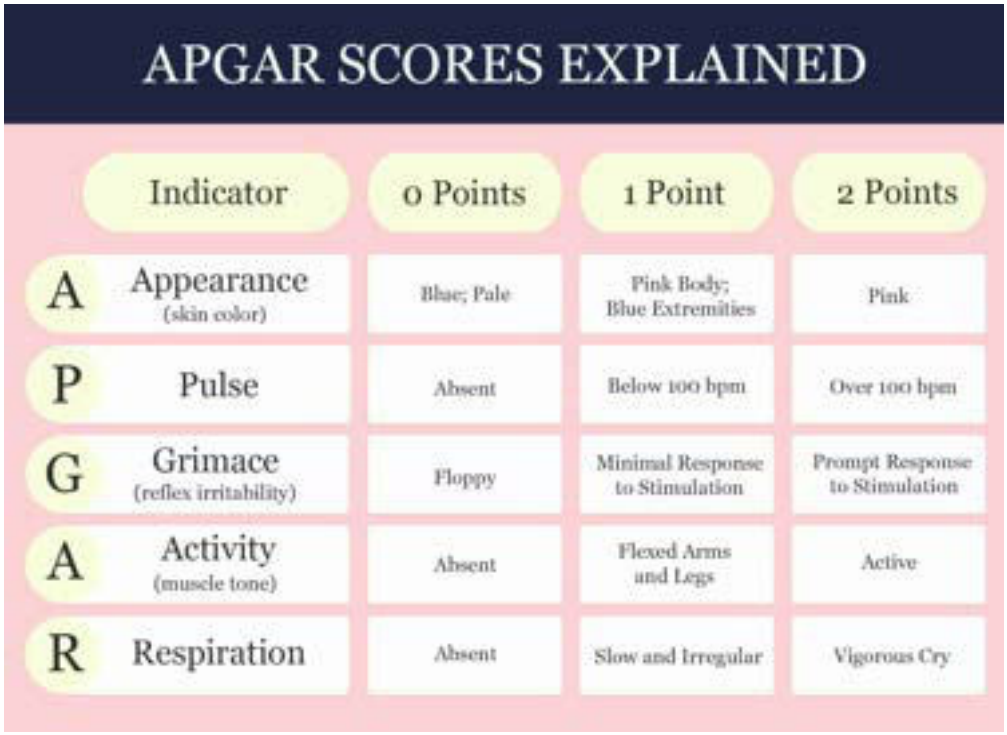
a) 0

b) 1

c) 2

d) 3

Correct Answer - B
Ans. is `b i.e., 1



## 1686. 0.9% NaCl contains True as?

a) 0.9 gm of Nacl in 1000 ml of fluid

b) 77 meg of sodium is 1000 ml of fluid

c) 154 meg of chloride in 1000 ml of fluid

d) 30 meg of sodium in 1000 ml of fluid.

Correct Answer - C
Ans. is 'c' i.e., 154 meq of chloride in 1000 ml of fluid
**Nomal** saline (Isotonic saline)

- Contains - 9 gms of Nacl in 1000 ml of fluid
154 meq/sodium in 1000 ml of fluid
154 meq Chloride in 1000 ml of fluid

## 1687. Confirmation of male intersex by?

a) USG abdomen

b) Genetic testing

c) Hormonal study

d) All of above

Correct Answer - B
Ans. is 'b' i.e., Genetic testing
**Intersex :(DSD)**

- Discrepancy between morphology of gonads and that of extemal genitalia
- Now Disorder of Sex development (DSD) is preferred instead of intersex
- Distinctly not defined as male or female
- Intersex trait not always manitest at both
- Some as not aware of intersex and it is confirned by Genetic testing
- Most common is virilisation of female 46 XX DSD.
- 46 XX DSD -
- Phenotype is xx & gonads are ovary but external genitalia is virilised. (due to lack of antimullerian hormone (AMH))
- Most common is congenital adrenal hyper plasia (CAH)
- Most commonly 21 a hydroxylase & 11[3 - Hydroxylase deficiency.

## 1688. Drug used in neonatal resuscitation

a) Adrenaline

b) Soda bi carbonate

c) Naloxone

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of above
**Drug used during neonatal resuscitation**

- Epinephrine./Adrenalin
- NS or RL
- Naloxone
- Sodium-by-carbonate

## 1689. Reye syndrome false is?

a) Associated with salicylate ingestion

b) Hepatomegaly

c) Jaundice

d) Hypoglycemia

Correct Answer - C
Ans. is 'c' i.e., Jaundice
**Reve syndrome**

- Detrimental effects to many organs, especially the brain and liver, as well as causing low blood sugar and increase ammonia level.
- Secondary Mitochondria hepatopathy
- H/o viral injection (Influenza, varicella) & salicylate interactions.
- Higher mortality rate.
- The disease causes fatty liver with minimal inflammation and cerebral edema (swelling of the brain).
- Jaundice is not usually present. With raised enzyme with normal bilirubin.
- Children of ages 4 to 12 are most commonly afflicted.
- Early diagnosis is vital; although most children recover with supportive therapy, it may lead to severe brain injury and death

**1690. 3 year old child come in ER with H/o vomiting, loose watey motion for 3 days. on examination, child was drowsy, sunken eye. Hypothermia and skin pinch take time to revert back, diagnosis?**

a) No dehydration

b) Mild dehydration

c) Some dehydration

d) Severe dehydration

Correct Answer - D

Ans. is 'd' i.e., Severe dehydration

- A child with severe dehydration will have at least two of the following four signs : sensorium is abnormally sleepy or lethargic, sunken eyes, drinking poorly or not at all, and a very slow skin pinch.
- A child with some signs of dehydration will have two of the following : restlessness or irritability, sunken eyes, drinking eagerly or slow skin pinch.
- A child with either one or none of these signs is classified as having no signs of dehydration.

## 1691. In duschene the knee jerk ?

a) Exaggerrated

b) Decrease

c) May be normal initially lateron increase

d) May be normal initially lateron decrease

Correct Answer - D

Ans. is 'd' i.e., May be normal initially lateron decrease

**Duchenne and Becker's muscular dystrophy.**

**X-like recessive So expression of gene is essentially confirmed in males.**

- Females are affected only if X-chromosome carrying the normal allele is lost or inactivated
- Becker is milder form with late onset and slow progression.
- In duchenni, onset is early with deloyed misection.
- Pseudohypertrophy of calf muscle, glutei, deltiod,
- Gower sign may positive at age of 3 year.
- Cardiac involvement started at 10 year of age.

**Deep tendon reflexes remain normal or are decreased in patients with DMD.**

**Ankle jerks are relatively preserved until the terminal stages, while the knee jerk reflex is less brisk than the ankles by age six, but is eventually lost.**

- Histopathology shows diffuse degeneration & regeneration of muscle fibre.
- Serum CPX are markedly high.

## 1692. Intra uterine hydronephrosis of 32-34 weeks-management?

a) Intrauterine drainage

b) Wait until 3 weeks

c) Immediate delivery

d) Require serial USG and other associated anomalies

Correct Answer - D

Ans. is `d' i.e., Require serial USG and other associated anomalies

- Antenatal hydronephrosis (ANH) is transient and resolves by the third trimester in almost one-half cases.
- The presence of oligohydramnios and additional renal or extrarenal anomalies suggests significant pathology. o All patients with ANH should undergo postnatal ultrasonography
- The intensity of subsequent evaluation depends on anteroposterior diameter (APD) of the renal pelvis and/or Society for Fetal Urology (SFU) grading.
- Patients with postnatal APD exceeding 10 mm and/or SFU grade 3-4 should be screened for upper or lower urinary tract obstruction and vesicoureteric reflux.
- Surgery is considered in patients with increasing renal pelvic APD and/or an obstructed renogram with differential renal function <35-40% or its subsequent decline.

**1693. 10-year-old boy with an ulcerated lesion with undermined edges over the upper chest with satellite lesion in anterior axillary fold for two months. Axillary lymph nodes present. Histopathology showed dermal abscess with ill defined histiocytes. AFB staining of the tissue was positive. Chest X ray showed infiltrations and cavities. Mantoux test was positive.**

a) Scrofuloderma

b) Skin abscess

c) Furuncle

d) Cellulitis

d) Cellulitis

Correct Answer - A

**Answer- A. Scrofuloderma**

Scrofuloderma occurs as a result of spread of infection to the skin from an underlying tuberculosis focus, usually a lymph node but also infected bones or joints. The lesions start as firm, painless and subcutaneous nodules that gradually enlarge and suppurate and then, form ulcers and sinus tracts in the overlying skin. Typical ulcers have undermined edges and a floor of granulation tissue.

## 1694. Goldenhar syndrome is associated with which prominent ocular manifestation:

a) Microcornea

b) Megalocornea

c) Sclerocornea

d) Epibulbar dermoids

Correct Answer - D
Ans. Epibulbar dermoids

- *Goldenhar syndrome (oculoauriculovertebral dysplasia with hemifacial microsomia) is a rare congenital developmental anomaly involving the first and second branchial arches.*
- *The classic features of this syndrome include ocular changes such as microphthalmia, epibulbar dermoids, lipodermoids and coloboma; aural features such as preauricular tragi, hearing loss and microtia; and vertebral anomalies such as scoliosis, hemivertebrae and cervical fusion.*
- ***Other ocular anomalies are rare but include microphthalmos,*** *microcornea, anophthalmos, eyelid colobomas, iris and choroid colobomas, motility disorders, strabismus, blepharoptosis, palpebral fissure, iris atrophy, polar cataract, anomalous lacrimal drainage system, and retinal and optic nerve anomalies*

## 1695. True about SLE is?

a) Autoimmune disease

b) Childhood SLE had poor prognosis than adult SLE

c) Presence of ANA

d) All are true

Correct Answer - D
Ans. is 'd' i.e., All are true
**SLE (sytemic lupus Erythematosus)**

- Autoimmune disorder
- Inflammation of blood vessel
- Childhood SLE had poor pnognosis than adult SLE

**Hall mark of SLE is presence of antinuclean antibody (ANA)**

- More common in female.
- Malar rash in pathognomic of SLE
- Non - erosive arthritis
- Nephritis
- Encephalopathy
- Pleuritis / Pericarditis
- Cytopenia

## 1696. 8 year old child with hematuria in 5 days after throat infection?

a) Post streptococcal nephropathy

b) Ig A nephropathy

c) Nephrotic syndrome

d) can be a or b

Correct Answer - B
Ans. is 'b'i.e., Ig A Nephnopathy
**IgA nephropathy**

- Predominant deposition of IgA in glomeruli.
- RECURRENT episode of gross rematuria that also precipitation by URTI in last 2-5 days.

**PSGN**

- Acute GN following infection by group A - -hemolytic streptococci.
- Common in school age children. o Streptococcal infection usually of throat (4 or 12 strain) or skin (strain 49) by 1-4 week prior to AGN.
- Edema, oliguria, hypertension, AR*F, hematurea of abrupt onset.*

**1697. Meconium can passed upto → days in healthy bady -**

a) 1

b) 3

c) 5

d) 7

Correct Answer - B
**Answer- B. 3**
Meconium is passed within → 24 hours of birth.
Meconium stools are passed → upto 3 days.
Transition stools are passed → zith & 5th days.
Regular milk stools are passed → After 5 days.

## 1698. In HSP gross hematurea is seen in what % of children?

a) 5 - 10%

b) 10 - 20%

c) 20 - 30%

d) 30 - 40%

Correct Answer - C
Ans. is 'c' i.e., 20 - 30%
**Henoch-schonlein purpura (HSP)**

- Small vessel vasculitis
- Purpuric rash
- Arthritis
- Abdominal pain
- Glomerulonephritis
- Gross hematuria is seen in 20-30% of cases

## 1699. Child has lesion on buttocks since 2 year spreading peripherally with central scarring non symptomatic diagnosis?

a) Erythema annular cetrifugam

b) Erythema migrains

c) Erythema marginatum

d) Erythema Gyratum

Correct Answer - A

Ans. is 'a' i.e., Erythema annulase cetrifugam

- Erythema annulare centrifugum : an asymptomatic or pruritic eruption of variable duration. The eruption may be associated with an underlying disease (eg, infection, malignancy, sarcoidosis, other systemic illness)
- The eruption begins as erythematous papules that spread peripherally while clearing centrally. These lesions enlarge at a rate of approximately 2-5 mm/d to produce annular, arcuate, figurate, circinate, or polycyclic plaques
- Lesions demonstrate a predilection for the thighs and the legs, but they may occur on the upper extremities, the trunk, or the face. The palms and the soles are spared.
- Erythema migrans: These lesions are typically less numerous, less circinate in configuration, and often accompanied by a history of a tick bite.
- Erythema gyratum repens: EAC can be distinguished from this condition by its slower rate of spread and by its less bizarre configuration. Also, erythema gyratum repens is almost always associated with an underlying malignancy.

- Erythema marginatum rheumaticum: This is a nonscaling gyrate erythema that by definition is found in association with rheumatic fever (10-18% of patients with rheumatic fever).

## 1700. 7 year old boy is ill and has fever. what is the caloric requirement?

a) 1200 kcal/d

b) 1500 kcal/d

c) 1900 kcal/d

d) 2200 kcal/d

Correct Answer - C
Ans. is 'c' i.e., 1900 kcal/day
Children
6 year 7 -> 1690
9 year -> 1950

## 1701. Boy power school preference no spoken at school, normal speech at other place, IQ assessment normal diagnosis is?

a) Selective mutism

b) ADHD

c) Autism

d) Dyslexia

Correct Answer - A
Ans. is 'a' i.e., Selective mutism

- Autism typically diagnosed before 36 month of age.
- Autism is a neurodevelopmental disorder of unknown etiology, but with a strong genetic basis.
- It develops and is typically diagnosed before 36 mo of age.
- It is characterized by a behavioral phenotype that includes qualitative impairment in the areas of language development or communication skills, social interactions and reciprocity, and imagination and play.
- Selective mutism is defined as a failure to speak in specific social situations, despite speaking in other situations; it is typically a symptom of an underlying anxiety disorder. Children with selective mutism can speak normally in certain settings, such as within their home or when they are alone with their parents, but do not speak in other social settings, such as at school or at other places outside their home.
- Attention-deficit/hyperactivity disorder (ADHD) is the most common neurobehavioral disorder of childhood, 1 of the most prevalent

chronic health conditions affecting school-aged children.

**ADHD is characterized by:**

- Inattention, including increased distractibility and difficulty sustaining attention.
- Poor impulse control and decreased self-inhibitory capacity
- Motor overactivity and motor restlessness.
- Dyslexia is characterized by an unexpected difficulty in reading in children and adults who otherwise possess the intelligence, motivation, and opportunities to learn considered necessary for accurate and fluent reading. Dyslexia is the most common and most comprehensively studied of the learning disabilities

## 1702. Kangaroo mother care - False is?

a) Can also be given by father

b) Especially for low birth weight body

c) Effective thermal control

d) All of above

Correct Answer - A
Ans.:A.)Can also be given by father
**KANGAROO MOTHER CARE**
• KMC is care of preterm or LBW infants by placing skin-to-skin contact with the mother
• Position: vertical position between the mother's breasts and under her clothes
• The position is maintained until the infant no longer tolerates it (indicated by sweating or baby refuses to stay in KMC position)
• Kangaroo nutrition: exclusive breast feeding
• Continuous KMC is an alternative to minimal care in an incubator for infants who have already overcome major problems while adapting to extra-uterine life

- Able to suck and swallow properly
- Thriving in neutral thermal environment

• Intermittent KMC (atleast 1-2 hour) when continuous KMC is not possible
• All mothers can provide KMC irrespective of age, parity, education, culture or religion
• Initiated in a facility and continued at home
**Clinical benefits**
• Significantly increases milk production in mothers
• Increases exclusive breast feeding rates

• Reduces incidence of respiratory tract and nosocomial infection
• Better cardiorespiratory stability
• Fewer apneic episodes
• Improved weight gain
• Improves thermal protection in infants and there is a reduced chance of hypothermia
• Improves emotional bonding between the infant and mothers
• Reduces the duration of hospital stay
• Improved survival in low resource setting

**Criteria for eligibility for KMC**

• Indicated in all stable LBW babies
• Very sick babies needing special care should be cared for under radiant warmer initially. KMC should be started after the baby is hemodynamically stable
• Short KMC sessions can be initiated during recovery with ongoing medical treatment
• KMC can be provided while the baby is being fed via orogastric tube or on oxygen therapy
• BW > 1800g: generally stable at birth and KMC initiated soon after birth
• BW 1200 — 1799 g: many babies have significant neonatal problems. It might take a few days to start KMC
• BW < 1200g: it might take days to weeks before initiating KMC

**When to stop KMC**

• When the baby attains a weight of 2500g and a gestation of 37 weeks
• A baby who upon being put in kangaroo position, tends to wriggle out, pull limbs out or cries, is not in need of KMC any more

## 1703. Hypocalcemia in a child may be associated with

a) Digeorge syndrome

b) Hypo parathyroidism

c) Magnesium deficiency

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of above
**Causes of hypocakemia**

- Hypo parathyroidism
- Digeorge syndrome
- PTH receptor defect (pseudo hypoparathyroidism)
- Magnesium dificiency
- Exogenous organic phosphate excess
- Vit D difeciency

## 1704. 3 days old newborn with unknown inborn error of metabolism, hyperammonemia in blood.

a) Maple syrup urine disease

b) Urea cycle enzyme dificiency

c) Organic acidurea

d) Phenyl ketonuria

Correct Answer - B

Ans. is 'b' i.e., Urea cycle enzyme deficiency

**Urea cycle enzyme defect**

- Catabolism of amino acid leads to free ammonia which is highly toxic
- Free ammonia is converted into urea by group of 5 enzyme
- Newborn is usually asymphomatic but leter on become symptomatic after giving protein
- Treatment is dietery protein restriction

**MSUD (maple syrup urine disease)**

- Defective decorboxglation of branch chain amino acid (leucine, Isoleuvine, valine)
- Autosomal recessine
- Smell of maple syrup in urine.

**Phenyl ketonuria**

- Autosomal recessive
- Deficiency of phenylalanine hydroxylase.
- Defect in conversion of phenylalanine to tyrosine.
- This leads to increase level of phenylalanine.

- This increase phenlylalanine converted into phenylpyruvate and phenyl acetate.
- This phenyl acetate gives mousy or musty odour in urine/body.

**Other point to remember?**

- Sweaty feat odour -Isovaleric academia
- In Alkaptanuria - Urine become darkish brown when exposed to air while purplish brown in porphyria.
- Smoky sweat - MSUD
- Mousy or Musty - Phenylketonuria
- Boiled cabbage - Tyrosinemia

## 1705. 13 year old female having sudden onset high grade fever with delirium. CT. finding s/o involvement of limbic system & medial temporal lobe - Dx is

a) Subarachnoid hemorrhage

b) Herpes simplex encephalitis

c) Pyomeningitis

d) Cerebral malaria

Correct Answer - B
Ans. is 'b' i.e., Herpes simplex encephalitis
**Herpes simplex encephalitis**

- Acute necrotising infection involving frontal, temporal lobe & limbic system.
- Feature Non specific - fever, headache, nuchal rigidity. convulsion, altered sensorium.
- Confirmed by CSF examin & radio imaging.
- Treatment supportive and Acyclovir

## 1706. Jaipur foot was invented by ?

a) P. K. Sethi

b) S. K. Verma

c) B. L. Sehgal

d) H. R. Gupta

Correct Answer - A
Ans. is 'a' i.e., P. K. Sethi
P. K. Sethi. Pramod Karan Sethi (28 November 1927 - 6 January 2008) was an Indian orthopaedic surgeon. With Ram Chandra Sharma, he co-invented the "Jaipur foot", an inexpensive and flexible artificial limb, in 1969.

## 1707. Metaphyseal fracture touching physis but not crossing it, comes under which type of Salter Harris physeal injury?

a) I

b) II

c) III

d) IV

Correct Answer - B

**Ans. is 'b' i.e., II**

**Salter and Harris have classified epiphyseal injuries into five types -**

- Type **I :** Complete separation of epiphysis from the metaphysis without fracture. Common in rickets, scurvy and osteomyelitis.
- Type II : The fracture involves the physis and a triangle of metaphyseal bone *(Thurston Holland sign)* i.e. *metaphyseal fracture touching the physis but not crossing it.* This is the commonest type of epiphyseal injury accounting for 73 percent of cases over 10 years of age.
- Type **III** :The fracture is intra- articular and extends along the physis and then along the growth plate. This injury is relatively uncommon.
- Type IV : The fracture is intra- articular and extends through the epiphysis, physis and metaphysis. Perfect reduction is necessary and open reduction is more often necessary to prevent growth arrest.
- Type V : Crushing of epiphysis. Growth arrest usually follows.
- Type VI *(Rang's type) : There is a peripheral physis (perichondrial ring) injury.*

## 1708. Which of the following is true about hallux valgus?

a) Great toe points laterally

b) Great toe points medially

c) Lateral angulation of the 1 stmetatarsophalyngeal joint

d) Dorsal angulation of the lstmetatarsophalyngeal joint

Correct Answer - A

**Ans. is 'a' i.e., Great toe points laterally**

**Hallux valgus**

- Hallux valgus is *lateral (outward) deviation* of great toe at the metatarsophalangeal joint.
- It is the *commonest foot deformity.*
- It is common in *women past middle age,* and is not infrequent even in young women.

**Common causes are :**

- Rheumatoid arthritis
- Wearing pointed shoes with high heels
- Hereditary factors
- Idiopathic

**Pathology**

- Outward deviation of the great toe.

**After several years two secondary changes occur :-**

i) Formation of a thick walled bursa *(bunion)* over the medial prominence of 1" metatarsal head.

*ii) Osteoarthritis of metatarsophalangeal joint.*

- It is worth noting that *medial prominence over metatarsal head looks like an exostosis, but there is no true exostosis.*
- Lateral deviation of great toe causes *overcrowding of lateral toes*

*and sometimes overriding of adjacent toes.*

## 1709. Callus formation is seen between what duration of fracture healing ?

a) 0 - 2 weeks

b) 2 - 4 weeks

c) 4 - 12 weeks

d) 12 - 16 weeks

Correct Answer - C

**Ans. is 'c' i.e., 4 - 12 weeks**

**Healing of a fracture**

The process of fracture healing varies according to the type of bone involved and the amount of movement at the fracture site. Following healing processes are there :?

**Indirect fracture healing (healing by callus)**

This is the 'natural' form of healing in tubular bones and in the absence of rigid fixation when there is micromovement at fracture site. There is formation of *internal and external callus.* This stage is divided in *three phases* which are further subdivided into five *stages :*

## 1710. Most common cause of amputation in India is ?

a) Diabetic gangrene

b) Gas gangrene

c) Road traffic accident

d) Tumors

Correct Answer - C
**Ans. is 'c' i.e., Road traffic accident**
**Amputation**
Amputation is a procedure where a part of the limb is removed through one or more bones.
Disarticulation is a procedure where the limb is removed through a joint.
Indications of amputation
Indications of amputations may be absolute or relative :?
A) Absolute indications

- *Gas gangrene*
- *Diabetic gangrene*
- *Irreparable loss of blood supply due to trauma or disease*
- Peripheral vascular disease *(Burger's gangrene)*

B) Relative indications

- Trauma
- Tumors
- Severe loss of function of limb
- Nerve injuries
- Congenital anomalies
- *Overall most common cause of amputation is trauma (injury) to a limb.*

- Most common cause of trauma is road traffic accident.

**1711. Which of the following structure are not normally visualized during the arthroscopy of the knee?**

a) Meniscus

b) Cruciate ligaments

c) Collateral ligaments

d) Patella articular surface

Correct Answer - C
**Ans. is 'c' i.e., Collateral ligaments**
**The following structures are visualized during the knee arthroscopy :-**
i) Medial and lateral meniscus
ii) Anterior and posterior cruciate ligaments
iii) Knee articular cartilage
iv) Patello - femoral joint
v) Loose bodies in joint

## 1712. Cock up splint is used in treatment of ?

a) Radial nerve palsy

b) Ulnar nerve palsy

c) Median nerve palsy

d) Posterior interosseous nerve palsy

Correct Answer - A

**Ans. is 'a' i.e., Radial nerve palsy**

**<u>Splints</u>**

- Any material which is used to support a fracture is called *splint.*
- Splints are used for immobilizing fractures; either temporarily during transportation or for definitive treatment.
- The most commonly employed splints is plaster of paris (POP) splint. Various POP splints are.

1. Casts : - Here the POP roll completely encircles the limb.
2. Slab : - It is not completely encircles the limb, but only one half or one third circumference.
3. Spica : - This encircles a part of the body; e.g., hip spica for fractures around hip.

## 1713. Thomas splint is used for immobilizing fractures of ?

a) Femur

b) Tibia

c) Radius

d) Ulna

Correct Answer - A
**Ans. is 'a' i.e., Femur**
**Splints**
Any material which is used to support a fracture is called *splint.*
Splints are used for immobilizing fractures; either temporarily during transportation or for definitive treatment.
The most commonly employed splints is plaster of paris (POP) splint. Various POP splints are:-
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## 1714. Functional cast bracing not used in fracture of ?

a) Humerus

b) Tibia

c) Ulna

d) Thoracolumbar spine

Correct Answer - D

**Ans. is 'd' i.e., Thoracolumbar spine**

**Functional cast bracing is used for the fracture of :-**

i. Humerus
i. Femur
i. Ulna
v. Tibia

## 1715. Gallows traction is used for fracture:

a) Shaft femur

b) Neck femur

c) Shaft tibia

d) Tibial tuberosity

Correct Answer - A
Ans. a. Shaft femur
Gallow's traction is used for treatment of fracture shaft of femur, in infants and children

***Gallow's Traction***

- Gallow's traction is used for treatment of fracture shaft of femur, in infants and children
- Weight must not be >12 kgs
- *Both the fractured and the normal femur are placed in skin traction and infant is suspended by these from a special frame. The buttocks should be lifted just off the bed so that the weight of the body provides counter traction and the fracture is reduced*

***Uses of Tractions***

| ***Name*** | ***Use*** |
|---|---|
| Bryant's Traction[Q] | Fracture shaft of femur in children |
| Gallow's Traction[Q] | Fracture shaft of femur in children |
| Russel's Traction[Q] | Fracture shaft of femur in older children |
| Perkin's Traction[Q] | Fracture shaft of femur in adults |

| | |
|---|---|
| 90°-90° Traction[Q] | Fracture shaft of femur in children |
| Agnes-Hunt Traction[Q] | Correction of Hip deformit |
| Well-Leg Traction[Q] | Correction of adduction or abduction deformity of hip |
| Dunlop Traction[Q] | Supracondylar fracture of humerus |
| Smith's Traction[Q] | Supracondylar fracture of humerus |

***Uses of Tractions***

| **Name** | **Use** |
|---|---|
| Calcaneal Traction | Open fractures of ankle or leg |
| Metacarpal Traction | Open forearm fractures |
| Head-Halter Traction | Cervical spine injuries |
| Crutchfield Traction[Q] | Cervical spine injuries |
| Halo-Pelvic Traction | Scoliosis |

## 1716. What about durham pin is true ?

a) It is used to give skeletal traction

b) It has threads in the center of pin

c) It is used to give skeletal traction through calcaneum

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

**Denham pin**

- It is a type of pin used to give skeletal traction.
- Threaded portion of the pin engages the bony cortices and reduces the chances of pin sliding.
- This type of pin is used commonly to give skeletal traction through the cancellous bone i.e. calcaneum. It can also be used to give traction through osteoporotic bones.

## 1717. Patient comes with crush injury to upper limb, doctor is concerned about gangrene and sepsis what can help decide between amputation and limb salvage?

a) MESS

b) Guliton score

c) Gustilo Anderson classification

d) ASIA guidelines

Correct Answer - A
**Ans. is 'a' i.e., MESS**
**MESS (Mangled Extremity Severity Score) :**

- Estimates viability of an extremity after trauma, to determine need for salvage vs empiric amputation.
- Following parameters are looked for :-
  i) Limb ischemia
  ii) Patient age range
  iii) Shock
  iv) Injury mechanism

## 1718. The most common bone fractured during birth

a) Clavicle

b) Scapula

c) Radius

d) Humerus

Correct Answer - A
A i.e. Clavicle
**Clavicle** is the most common bone to be fractured in children and during birth.

## 1719. All are true about colles fracture except ?

a) In old age

b) Dorsal shift

c) At cortico-cancellous junction

d) Garden spade deformity

Correct Answer - D

**Ans. is 'd' i.e., Garden spade deformity**

**COLLES FRACTURE**

- Colle's fracture is an *extra-articular* fracture at the *distal end* of radius, at its *cortico-cancellous junction.* It is the *most common fracture in person over 40 years* of age and especially in women after menopause *(Postmenopausal females).* The association of the fracture with osteoporosis is now well established and it is one of the *fragility fracture,* seen in osteoporosis. The fracture nearly always caused by fall on outstretched hand.

**Displacement in colle's fracture**

The fracture line runs transversely at the cortico-cancellous junction. In the majority of the cases, one or more displacements *of the distal fragment* occur :-

i. *Dorsal displacement (Dorsal shift)*
i. *Lateral tilt (lateral angulation)*
i. *Dorsal tilt (Dorsal angulation)*
*. *Supination (external rotation)*
*. *Lateral displacement (lateral shift)*
i. *Impaction (proximal migration)*
i. Clinical features of colles fracture

Pain and swelling at the wrist.

Typical deformity : There is a dorsal hollow or depression just proximal to the fracture and immediately distal to this there is a marked prominence caused by lower fragment being displaced backwards, carrying with it the whole of the carpus and hand. This gives appearance of a fork, So named *dinner fork/ silver fork / spoon shaped deformity.*

## 1720. Most common type of supra condylar fracture in children ?

a) Posteromedial extension

b) Posterolateral extension

c) Anteromedial flexion

d) Anterolateral flexion

Correct Answer - A

**Ans. is 'a' i.e., Posteromedial extension**

**Supracondylar fracture of humerus**

- *Supracondylar humeral fractures are the most common elbow fractures in children.* Most common age group affected is *5-8 years.* Boys are affected more than girls. Left side is more common than right.

**Mechanism of injury**

- Mostly it occurs due to *hyperextension injury.*
- Fracture is caused by a *fall onto the outstretched hand with hyperextension at elbow.*

**Types of supracondylar fracture**

- Supracondylar fracture is broadly classified **into** *extension type* and *flexion type.*

**1) Extension type**

- It **is the** *most common type* **(97 - 99%).**
- *Distal fragment is extended (tilted backward/posteriorly)* in relation to proximal fragment.
- Occurs due to hyperextension injury after fall on outstretched hands.
- Generally, displacement of distal fragment may be : -

*i) Posteromedial (70-80%)*

*ii) Posterolateral (20-30%)*

2) **Flexion type**

- It is less common type (1-3 %)
- Distal fragment is flexed (tilted forward/anteriorly) in relation to proximal fragments.
- The mechanism of injury generally is believed to be *a fall directly onto the elbow* rather than a fall on outstretched hand.
- As the extension type fracture is more common (97 - 99%), *the most common elbow injury in children is extension type of supracondylar fracture.*

**Clinical features of supracondylar fracture**

- **Following a fall, the child is** in pain and elbow is swollen.
- In extension type of injury, *`S' shaped deformity* of the elbow is obvious.
- There is loss of both active and passive movements of elbow.
- Symptoms relating to vascular and nerve injury may be seen.
- Unusual posterior prominence of the point of elbow (tip of olecrenon) because of backward tilt of the distal fragment.
- *Three point bony relationship is maintained* as the fracture is above the level of condyles.
- *Dimple sign* due to one of the spikes of proximal fragment penetrating the muscle and tethring the skin.

## 1721. Not a complication of fracture neck of femur ?

a) Non-union

b) Malunion

c) AVN

d) Osteoarthritis

Correct Answer - B

**Ans. is 'b' i.e., Malunion**

**Complications of femoral neck fracture**

- Fractures of the neck of the femur are more prone to serious complications than in any other fracture. All the complications affect fractures with displacement rather than impacted abducted (valgus impacted) fractures.

**The important complications are :**

1) Avascular necrosis of femoral head

- *AVN is the most common complication of femoral neck fracture.*
- It occurs in 15-35% of cases of displaced fractures and

2) Non-union

- *Non-union is the second most common complication of femoral neck fracture.*
- It occurs in 10-30% of cases of displaced fractures and

3) Secondary osteoarthritis

- It occurs a few years following fracture neck femur.
- Avascular necrosis or collapse of femoral head leads to secondary osteoarthritis of the hip joint.

## 1722. Garden's classification used for which fracture?

a) Surgical neck humerus

b) Shaft humerus

c) Neck of femur

d) Shaft femur

Correct Answer - C

**Ans. is 'c' i.e., Neck of femur**

**<u>Garden's classification</u>**

Garden's classification is the *most useful and most accepted classification of the neck of femur.* This is based on the degree of displacement of the fracture. Following 4 stages of fracture are there *:?*

*1)* *Stage 1 :* The fracture is *incomplete,* with head tilted in postero-lateral direction, i.e. into valgus, therefore is known as *valgus (abduction) impacted fracture.*

*2)* *Stage 2 :* Complete fracture but undisplaced.

*3)* *Stage 3 :* Complete fracture with partial displacement.

*4)* *Stage 4 :* Complete fracture with total displacement.

The degree of displacement, in Garden's classification, is judged from change in the direction of medial trabecular stream of the neck, in relation to the bony trabeculae in the weight bearing part of the head and in the corresponding part of the acetabulum.

*i)* *Stage 1 :-* There is an obtuse angle laterally at the trabecular stream.

*ii)* *Stage 2 :-* Trebeculae between head and neck are broken but they are in alignment with each other and with trabeculae in the acetabulum.

*iii)* *Stage 3 :-* All three trabeulae are out of alignment.
*iv)* *Stage 4 :-* Acetabular and head trabeculae are in alignment but head and neck trabeculae are not aligned.

## 1723. Radiological factors indicating an unstable pelvis are all except ?

a) Posterior sacroiliac complex displacement by > 1 cm

b) Avulsion fracture of sacral or ischial end of the sacrospinous ligament

c) Avulsion fractures of the L5 transverse process

d) Isolated disruption of pubic symphysis with pubic diastasis of 2 cm.

Correct Answer - D

**Ans. is 'd' i.e., Isolated disruption of pubic symphysis with pubic diastasis of 2 cm**

**Radiographic factors indicating unstable pelvis are :-**

- Posterior sacroiliac complex displacement by > lcm
- Avulsion fracture of sacral or ischial end of the sacrospinous ligament
- Avulsion fractures of the L5 transverse process
- Disruption of pubic symphysis with pubic diastasis of 2 cm with posterior pelvic injury or injury to anterior/ posterior sacroiliac ligament or sacrospinous ligaments.
- Presence of gap rather than impaction in the posterior pelvic ring.

## 1724. Pipkin's classification system is used for ?

a) Fracture femur head

b) Fracture femur shaft

c) Fracture proximal tibia

d) Fracture calcaneum

Correct Answer - A

**Ans. is 'a' i.e., Fracture femur head**

**Pipikin's classification of femoral head fracture**

- *Type I :* Femoral head fracture inferior (caudal) to fovea.
- *Type II :* Femoral head fracture superior (cephalad) to fovea.
- *Type III :* Femoral head fracture with associated femoral neck fracture.
- *Type IV :* Type I, II or III with associated acetabular fracture.

## 1725. One of the common fractures that occur during boxing by hitting with a closed fist is ?

a) Monteggia fracture dislocation

b) Galeazzi fracture dislocation

c) Bennett's fracture dislocation

d) Smith's fracture

Correct Answer - C
Ans. is 'c' i.e., Bennett's fracture dislocation
The common mechanism of injury for Benett's fracture is an axial blow directed against the partially flexed metacarpal, in most cases during 'fist fights'.
**Benett's fracture**
Benett's fracture is an intra-articular fracture dislocation of the *palmar base of first metacarpal bone* of the thumb with either *subluxation or dislocation of first carpometacarpal joint, i.e. trapezometacarpal joint.* The common mechanism of injury is an axial blow directed against the partially flexed metacarpal, in most cases during "Fist fights ". Patient complains of pain, swelling and tenderness over the base of the thumb. Movements of thumb are restricted.
Displacing force in Bennett's fractures
Following are the deforming forces in Bennett's fracture :-
*i)* At the distal fragment, it is the *adductor pollicis.*
*ii)* At the proximal fragment, it is the *abductor pollicis longus.*
*Base of the thumb metacarpal is pulled dorsally and medially by the abductor pollicis longus, while the distal attachment of adductor*

*pollicis further levers the base into abduction.*

## 1726. Most common complication of mid shaft humerus fracture is ?

a) Radial nerve palsy

b) Median nerve palsy

c) Nonunion

d) Malunion

Correct Answer - A

**Ans. is 'a' i.e., Radial nerve palsy**

**<u>Complications of humerus shaft fracture</u>**

1. *Nerve injury : - Radial nerve is the most commonly injured nerve* in fracture shaft humerus. It is particularly common in oblique fractures at the junction of middle and distal third of the bone (Holstein- Lews fracture).
2. *Vascular injury :* - Brachial artery damage.
3. *Delayed union or non-union :* - Delayed union or non-union may occur, especially in transverse fracture of the midshaft. *The cause of non-union is distraction at fracture site due to gravity and weight of plaster.*
4. *Joint stiffness :* - Shoulder & elbow stiffness.

## 1727. Motorcyclist's fracture is ?

a) Stellate fracture across base of skull

b) Transverse fracture across base of skull

c) Lamina fracture of CI vertebra

d) Spinous process fracture of C7 vertebra

Correct Answer - B

**Ans. is `b' i.e., Transverse fracture across base of skull**

**Motorcyclist's fracture**

- Because of the inherent instability of two wheeled vehicles, the rider and passanger inevitably fall to the ground in a crash. Injuries can occur to any part of the body, but the limbs and head are particularly susceptible to serious injury.
- Impact with the road surface or another vehicle at speed often causes skull fracture, even in the presence of a helmet.
- A transverse fracture across the floor of the skull, usually called a "hinge fracture", is sometimes referred to as motorcyclist fracture. At autopsy, the base of the skull may be appriciated to have divided into two halves, each moving independently of each other like a hinge, the so-called motorcyclist fracture.

## 1728. March fracture is fracture of:
***September 2007***

a) Calcaneus

b) 2nd metatarsal

c) Distal fibula

d) Proximal tibia

Correct Answer - B
Ans. B: 2nd metatarsal
A stress fracture of the 2nd or 3rd metatarsal bone is sometimes called a 'march fracture' because soldiers running in boots often get it.
The fracture heals spontaneously, so treatment is purely symptomatic.

## 1729. What is not true about pulled elbow?

a) Occurs due to sudden axial pull on extended elbow

b) Forearm is held in pronation and extention

c) Most commonly occurs between 2-5 years of age

d) Treatment is quick pronation and flexion of elbow

Correct Answer - D

**Ans. is 'd' i.e., Treatment is quick pronation and flexion of elbow**

**Pulled elbow**

- If a young child is lifted by the wrist, the *head of the radius may be pulled partly out of the annular ligament, i.e., subluxation of the head of the radius.*
- It occurs when *forearm is pronated, elbow is extended and longitudinal traction is applied* to the hand or wrist, e.g., lifting, spinning or swinging a child with wrist or hand. Pulled elbow most commonly occurs between the age of *2-5 years.*

***Clinical* features of pulled elbow**

- History of *sudden axial pull on extended elbow.*
- Immediately child starts crying and is unable to move the affected elbow.
- The forearm is held in *pronation and extension* and any attempt to supinate is resisted.
- Child does not allow to touch the affected limb.
- X-ray seems to be normal.

**Treatment of pulled elbow**

- *Treatment is simple.* The child's attention is diverted, the elbow is quickly supinated and then slightly flexed.
- *This reduces the subluxation or dislocation and the radial head is*

*relocated with a snap.*

## 1730. Hangman's fracture is the fracture involving which cervical vertebra?

a) C1

b) C2

c) C3

d) C4

Correct Answer - B
Ans. is 'b' i.e., C2
Hangman's fracture is a bilateral fracture of the pars interarticularis of the axis (C2) with a traumatic spondylolisthesis of axis (C2) over the C3 vertebrae. Thus Hangman's fracture is not simply a fracture, but fracture-dislocation of the axis (C2).
The mechanism of injury is an *extension with distraction* (in true, judicial hangman's fracture) and *hyper-extension, axial compression & flexion* (in civilian injuries, which are now more common).
It is the *second most common type of Axis ($C_2$) fracture,* second only to odontoid fractures.
Fatalities are common, However, neurological deficit is unusual as the fracture of the posterior arch decompresses the spinal cord.
Most of the fatalities occur at the scene of injury, acute post-admission mortality is low.
*Successful healing of $C_2$ traumatic spondylolisthesis is reported to approach 95%.* This is most commonly achieved with non-operative measures, even in the presence of displacement of pars inter-articularis.

## 1731. Most common site for the osteoporotic vertebral fracture is ?

a) Dorsolumbar spine

b) Cervical spine

c) Lumbosacral spine

d) Dorsal spine

Correct Answer - A

**Ans. is 'a' i.e., Dorsolumbar spine**

- Osteoporosis is an asymptomatic disorder unless complications (predominantly fractures) occur.
- *Most common symptom of osteoporosis is back pain secondary to vertebral compression fracture.*
- *Dorso-lumbar spine is the most frequent site.*
- Other common sites of fracture are lower end radius (Colle's fracture) and fracture neck femur.
- Osteoporotic fracture (fragile fractures) are : (i) *Fracture vertebrae (most common),* (ii) *Colle's fracture,* (iii) *Fracture neck femur.*
- Serum calcium, phosphate and alkaline phosphatase are normal in osteoporosis.

## 1732. When do you operate for prolapsed disc ?

a) Busy executive needs quick surgery

b) Only with weakness no pain

c) Severe pain interfering with activity and not relieved by rest and treatment of 8 weeks

d) Patient of PID with difficulty in ambulation

Correct Answer - C
Ans. is 'c' i.e., Severe pain interfering with activity and not relieved by rest and treatment of 8 weeks
Indications for surgery in cases of Prolapsed intervertebral disc are :-
i) Failure of conservative treatment (even after 8 weeks of treatment).
ii) Progressive neurological deficit.
iii) Cauda - equina syndrome.
iv) Severe sciatic tilt.

## 1733. Vertebral rotation in scoliosis is checked in

a) Forward bending

b) Backward bending

c) Sideways

d) Without bending

Correct Answer - A
Ans. is 'a' i.e., Forward bending
The forward bending test is very sensitive in demonstrating the vertebral rotation that takes place in a structural scoliotic curve.

- Quantification of the rotation is done by measuring the rib hump by use of inclinometer or scoliometer.
- Severity of the curve in scoliosis is measured by cobb's angle, i.e. an angle between line passing through the margins of vertebra at ends of curve. To use the cobb method, one must first decide which vertebrae are the end-vertebrae of the curve. These end vertebrae are the vertebrae at the upper and lower limits of curve which tilt most severely toward the conavity of the curve. Other method used to measure scoliosis angle is Ferguson's method.

## 1734. Test used for prolapsed lumbar intervertebral disc is -

a) Active straight leg raising test

b) Lasegue test

c) Thomas test

d) Apley's grinding test

Correct Answer - B

**Ans. is 'b' i.e., Lasegue test**

**Clinical examination in PID**

- Forward stooping (bending), twisting or coughing aggravate the pain.
- The trunk is tilted to one side (sciatic scoliosis or sciatic tilt).
- Movements of lumbar spine are restricted especially flexion.
- *Straight leg raising (SLR) test is positive, i.e. straight leg raising is possible 40° or less* *(AIIMSO4).*
- Lasegue test (a modification of SLR test) is positive.

## 1735. Lumbar canal stenosis presents as ?

a) Claudication

b) Scoliotic deformity

c) Kyphotic deformity

d) Radiculopathy

Correct Answer - A
Ans. is 'a' i.e., Claudication
The patient of lumbar canal stenosis is usually a man aged over 50, complains of aching, heaviness, numbness and paraesthesia in the thighs and legs; it comes on after standing upright or walking for 5-10 minutes, and is consistently relieved by sitting, squatting or leaning against a wall to flex the spine (hence the term 'spinal claudication').

## 1736. Posterior gliding of tibia on femur is prevented by ?

a) Anterior cruciate ligament

b) Posterior cruciate ligament

c) Medial collateral ligament

d) Lateral collateral ligament

Correct Answer - B

**Ans. is 'b' i.e., Posterior cruciate ligament**

**Posterior cruciate ligament**

- PCL begins *from posterior part of intercondylar area of tibia and runs upwards, forwards and medially to attach the anterior part of the lateral surface of medial condyle of femur.*
- PCL is *extrasynovial but intracapsular, i.e.,* lies between synovium and capsule of the knee joint.
- It provides antero-posterior stability and *prevents posterior gliding of tibia on femur.*
- It is taut in flexion.
- Blood supply of cruciate (anterior & posterior) ligaments is from : -

1. *Middle genicular artery (major supply)*
2. Inferior genicular (medial & lateral) artery (less important).

- Nerve supply of cruciate ligaments (ACL & PCL) is from posterior articular branch of tibial nerve.

## 1737. Lachmann's test is used for ?

a) ACL injury

b) PCL injury

c) MCL injury

d) LCL injury

Correct Answer - A
**Ans. is 'a' i.e., ACL injury**
**ACL injury**
ACL is the *most commonly injured ligament of knee.*
Most common mechanism of injury is twisting (medial rotation) with valgus injury on semiflexed knee.
Often with this mechanism MCL and medial meniscus are also injured. This triple injury of ACL , MCL and medial meniscus is called O'Donghue triad.
Isolated ACL can also be injured by hyperextension injury.
Tests for ACL injury
**Following tests are used for ACL injury : *?***

i. *Lachman's test*
i. *Pivot shift test*
i. *Flexion-rotation drawer test*
*. *Anterior drawer test*
*. *Jerk test*
i. *Loose's test*

- Lachman's test is the *most sensitive test for anterior cruciate ligament tears.* It is done with the knee flexed at *20 degrees.* So it can be done in acute as well as *chronic injuries.* (because in acute cases with hemarthrosis more flexion is usually not possible so performing anterior drawer test is difficult).

## 1738. Which among the following is not a feature of Unhappy triad of 0' Donoghue?

a) ACL injury

b) Medial meniscus injury

c) Medial collateral ligament injury

d) Fibular collateral ligament injury

Correct Answer - D
Ans. is 'd' i.e., Fibular collateral ligament injury
The most common mechanism of ligament disruption of knee is *adduction (valgus), flexion and internal rotation offemur on tibia* which usually occur in sports in which the foot is planted solidly on the ground and leg is twisted by rotating body (i.e., foot ball, soccer, basket ball, skiing).
The medial structures *medial (tibial) collateral ligament (MCL) and medial capsular ligament* are first to fail, followed by *ACL tears,* if the force is of sufficient magnitude. The medial meniscus may be trapped between condyles and have a peripheral tear, thus producing unhappy triad of 0' Donoghue.

## 1739. Commonest ligament injured in ankle injury ?

a) Anterior talofibular ligament

b) Calcaneofibular ligament

c) Posterior talofibular ligament

d) Spring ligament

Correct Answer - A
Ans. is 'a' i.e., Anterior talofibular ligament

- The ankle is one of the most common sites for acute musculoskeletal injuries. Sprains constitute 85% of all ankle injuries, and 85% of those involve a lateral inversion mechanism.
- Inversion Sprain - Inversion ankle sprains occur when the foot turns in or out to an abnormal degree relative to the ankle. The most common mechanism of an ankle sprain is a combination of plantarflexion and inversion where the foot is pointing downward and inward.
- The lateral ligaments are involved in an inversion ankle sprain and hence most commonly damaged. These ligaments are on the outside of the ankle, which includes the anterior talofibular (ATFL), calcaneofibular (CFL) and posterior talofibular ligaments (PTFL). Injury to the ATFL is the most common. When both the ATFL and CFL are injured together, ankle instability will be more noticeable. The PTFL is the strongest of the three ligaments and is rarely injured in an inversion sprain.

## 1740. Puttiplat operation is done for ?

a) Elbow instability

b) Shoulder instability

c) Rotator cuff tear

d) Biceps Tendinitis

Correct Answer - B
Ans. is 'b' i.e., Shoulder instability

- Important surgeries for recurrent anterior dislocation of shoulder are:
  i) Barkart's operation iii) Bristow's operation v) Eden Hybinette operation
  ii) Putti-Platt's operation iv) McLaughin's operation vi) Magnum & Stack operation

## 1741. Investigation of choice for entrapment neuropathy is ?

a) CT SCAN

b) Clinical examination

c) Ulrasonography

d) EMG NCV

Correct Answer - D
Ans. is 'd' i.e., EMG NCV
The diagnosis of mononeuropathy in entrapment neuropathy is based on electrodiagnostic studies (EMG/ NCV) and Magnetic resonance imaging (MRI).
Entrapment neuropathy is a medical condition caused by entrapment and compression of a peripheral nerve wherever it traverses fibro-osseous tunnels.
**Sites of entrapment neuropathy are : -**

i. *Carpal tunnel :-* Median nerve (carpal tunnel syndrome)
i. *Cubital tunnel :-* Ulnar nerve (cubital tunnel syndrome)
i. *Guyan's canal :-* Ulnar nerve (Guyan's canal syndrome)
*. *Tarsal tunnel :-* Posterior tibial nerve (Tarsal tunnel syndrome)
*. *Inguinal ligament :-* Lateral cutaneous nerve of thigh (meralgia paraesthetica).
i. *Suprascapular notch :-* Suprascapular nerve
i. *Neck of fibula :-* Common peroneal nerve
i. *Fascial tunnel of superficial peroneal nerve :-* Superficial peroneal nerve
c. *Arcase of Frohse :-* Posterior interosseous syndrome
c. *Thoracic outlet :-* Lower trunk of brachial plexus
i. *Compression in the foot :-* Digital nerve (Morten's metatarsalgia)

## 1742. Froment's sign is positive in cases of weakness of ?

a) Thumb adduction

b) Thumb abduction

c) Thumb flexion

d) Thumb extension

Correct Answer - A

**Ans. is 'a' i.e., Thumb adduction**

Normally when a person is asked to grasp a book between the thumb and index finger, he will grasp the book
firmly with thumb extended, taking full advantage of the adductor pollicis and the first dorsal interosseous muscles.

If the ulnar nerve is injured the adductor pollicis will be paralysed and the patient will hold the book by using the flexor pollicislongus (supplied by median nerve) producing flexion at the interphalangeal joint.

This becomes more pronounced if the examiner tries to pull the book out while the patient tries to hold it.

This sign is known as `Froment's sign' or the 'book test'.

## 1743. Inability to pronate forearm is due to injury to which nerve ?

a) Ulnar

b) Radial

c) Median nerve

d) Musculocutaneous

Correct Answer - C

Ans. is 'c' i.e., Median nerve

- Pronation of the forearm is by two muscles pronator teres and pronator quadratus. These two muscles are supplied by median nerve. Thus injury to median nerve produces inability to pronate forearm.
- The median nerve is also called labourer's nerve. The median nerve arises by two roots, one from the lateral cord (C5,6,7) and the other from the medial cord (C8, T1). The various muscles supplied by median nerve are : *?*

1) *In the forearm*

- All the flexor muscles of the forearm, except the flexor carpi ulnaris and the medial half of flexor digitorum profundus to the ulnar two fingers. These muscles are : -

i. *Pronater teres*
i. *Flexor digitorum superficialis*
i. *Flexor pollicis longus*
*. *Flexor carpi radialis*
*. *Flexor digitorum profundus (lateral half)*
i. *Pronator quadratus*
i. *Pulmaris longus*

2) *In hand*

- Median nerve supplies : -

i. *Thenar muscles (except adductor pollicis)* - Flexor pollicis brevis, opponens pollicis and *abductor pollicis brevis. Adductor pollicis is supplied by ulnar nerve.*

i. First two lumbricals

## 1744. Which of the following deformity is evident in case of erbs palsy?

a) Policeman tip deformity

b) Winging of scapula

c) Claw hand

d) Wrist drop

Correct Answer - A
Ans. is 'a' i.e., Policeman tip deformity
*Deformity (position of the limb) in Erb's palsy*
i) Arm : Hanges by the side; it is adducted and medially rotated
*ii) Forearm :* Extended and pronated
n The deformity is known as 'policeman's tip hand' or 'porter's tip hand'.

## 1745. High stepping gait is seen in ?

a) CTEV

b) Common peroneal nerve palsy

c) Polio

d) Cerebral palsy

Correct Answer - B
Ans. is 'b' i.e., Common peroneal nerve palsy
First to touch the ground is the forefoot, and not the heel.

## 1746. Sunderland classification is used for ?

a) Nerve injury

b) Muscle injury

c) Tendon injury

d) Ligament injury

Correct Answer - A
Ans. is 'a' i.e., Nerve injury
Sunderland is an extension of the seddon classification and includes 5 types of nerve injuries.

## 1747. Arthritis involving DIP, PIP, 1st carpometacarpal with sparing of MCP and wrist joints is typical of ?

a) Osteoarthritis

b) Rheumatoid arthritis

c) Ankylosing spondylitis

d) Psoriatic arthritis

Correct Answer - A
Ans. is 'a' i.e., Osteoarthritis
1st Carpometacarpal joint Wrist- Osteoarthritis

## 1748. Heberden node denotes involvement of ?

a) Distal inetrphalangeal joint

b) Proximal interphalangel joint

c) Metacarpophalangeal joint

d) Metatarsophalangeal joint

Correct Answer - A
**Ans. is 'a' i.e., Distal inetrphalangeal joint**
**In osteoarthritis of hand :**
*i) Distal interphalangeal joint :- Heberden's node*
*ii) Proximal interphalangeal joint :- Bouchard's node*

## 1749. Which of the following is not the extra - articular manifestations of ankylosing spondylitis?

a) Acute anterior uveitis

b) Aortic valve disease

c) Pulmonary fibrosis

d) Dilated cardiomyopathy

Correct Answer - D

**Ans. is 'd' i.e., Dilated cardiomyopathy**

Extra articular manifestations of ankylosing spondylitis are acute anterior uveitis (in 5%); rarely aortic valve disease, carditis and pulmonary fibrosis also occur.

**Ankylosing spondylitis (marie-strumpell disease)**

- Ankylosing spondylitis is a chronic progressive inflammatory disease of the sacroiliac joints and the axial skeleton.
- Prototype of seronegative (absence of rheumatoid factor) spondyloarthropathies.
- Inflammatory disorder of unknown cause.
- Usually begins in the *second or third decade* with a median age of 23, in 5% symptoms begin after 40.
- *Male to female ratio is 2-3 : 1*
- *Strong correlation with HLA-B27*
- *90-95% of cases are positive for HLA - B27.*
- Joints involved in ankylosing spondylitis
- Ankylosing spondylitis primarily affects axial skeleton.
- The disease usually begins in the sacro-iliac joints and usually extends upwards to involve the lumbar, thoracic, and often cervical

spine.

- In the worst cases the hips or shoulders are also affected. Hip joint is the most commonly affected peripheral joint.
- Rarely knee (Ebenzar 4th/e 593) and ankle (Apley's 9th/e 67) are also involved. Pathology
- Enthesitis i.e. inflammation of the insertion points of tendons, ligaments or joint capsule on bone is one of the hallmarks of this entity of disease.
- Primarily affects axial (spinal) skeleton and sacroiliitis is often the earliest manifestation of A.S..
- Involvement of costovertebral joints frequently occur, leading to diminished chest expansion (normal 5 cm) o Peripheral joints e.g. shoulders, and hips are also involved in 1/3rd patients.
- Extraarticular manifestations like acute anterior uveitis (in 5%); rarely aortic valve disease, carditis and pulmonary fibrosis also occur.
- Pathological changes proceed in three stages?

1. Inflammation with granulation tissue formation and erosion of adjacent bone.
2. Fibrosis of granulation tissue
3. Ossification of the fibrous tissue, leading to ankylosis of the joint.

## 1750. True about ankylosing spondylitis are all except ?

a) Affects males

b) 3 0-40yrs

c) 90% HLA-B5

d) Bamboo spine

Correct Answer - C
Ans. is 'c' i.e., 90% HLA-B5
**Ankylosing spondylitis (marie-strumpell disease)**

- Ankylosing spondylitis is a chronic progressive inflammatory disease of the sacroiliac joints and the axial skeleton.
- rototype of seronegative (absence of rheumatoid factor) spondyloarthropathies.
- **Inflammatory disorder of unknown cause.**
- Usually begins in the second or third decade with a median age of 23, in 5% symptoms begin after 40.
- **Male to female ratio is 2-3 : 1**
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- **9s are positive for HLA - B27.**

**Joints involved in ankylosing spondylitis**

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- Fibrosis of granulation tissue
- Ossification of the fibrous tissue, leading to ankylosis of the joint.

**Radiological features of ankylosing spondylitis**

- Radiographic evidence of sacroiliac joint is the most consistent finding in ankylosing spondylitis and is crucial for diagnosis. The findings are :-
- Sclerosis of the articulating surfaces of SI joints
- Widening of the sacroiliac joint space
- Bony ankylosis of the sacroiliac joints
- Calcification of the sacroiliac ligament and sacro-tuberous ligaments
- Evidence of enthesopathy - calcification at the attachment of the muscles, tendons and ligaments, particularly around the pelvis and around the heel.

**X-ray of lumbar spine may show :-**

- Squaring of vertebrae : The normal anterior concavity of the vertebral body is lost because of calcification of the anterior longitudinal ligament.
- ft Loss of the lumbar lordosis.
- Bridging `osteophytes' (syndesmophytes)
- Bamboo spine appearance

## 1751. Which of the following is not a feature of rheumatoid arthritis?

a) Heberden nodes

b) Swan neck deformity

c) Ulnar deviation of fingers at metacarpopalyngeal joint

d) Symmetric reduction of joint space

Correct Answer - A

**Ans. is 'a' i.e., Heberden nodes**

Heberden nodes is a feature of osteoarthritis and not rheumatoid arthritis.

**Important hand deformities of hand in RA**

- Boutonniere deformity : Flexion contracture of PIP joint and extension of DIP joint.
- Swan neck deformity : Hyperextension of PIP joint and flexion at DIP joint.
- Z-deformity : Radial deviation of wrist with ulnar deviation of fingers.
- Hyperextension of 1st interphalangeal joint and flexion of MP joint.

## 1752. Swan neck deformity is seen in:
***March 2013 (a, c, e)***

a) Ankylosing spondylitis

b) Rheumatoid arthritis

c) Osteoarthritis

d) Reiter's syndrome

Correct Answer - B
Ans. B i.e. Rheumatoid arthritis
**Rheumatoid arthritis**

- RA is a disease of: Synovium/ synovial membrane
- RA starts in: Synovium
- Body tissue mostly affected in RA: Synovium
- Characteristic feature:
  - Persistent inflammatory synovitis,
  - Peripheral joint,
  - Symmetrical distribution

  **Causes:**
  - Immunological,
  - Familial,
  – Infective (implicated)
- Mostly affects: Females (three times)
- Earliest lesion in rheumatoid synovitis:
  – Microvascular injury,
  – Increase in number of synovial lining cells

  **Joints characteristically involved in RA:**
  – MCP,
  – PIP (symmetric arthritis)
- Boutonniere deformity:

– Flexion contracture of the PIP
– Extension of DIP

- Criteria for diagnosis: Any 4 criteria must be present
- Pathognomic feature: Rheumatoid nodule
- Extra-articular manifestations are seen in: Individuals with high titres of RF (autoantibodies to the Fc component of IgG)

## 1753. CASPAR criteria is used in diagnosis of ?

a) Psoriatic arthritis

b) Rheumatoid arthritis

c) Ankyosing spondylitis

d) Reactive synnovitis

Correct Answer - A

**Ans. is 'a' i.e., Psoriatic arthritis**

Classification criteria for psoriatic arthritis (CASPAR) is used for the diagnosis of psoriatic arthropathy.

- The CASPAR (classification Criteria for Psoriatic Arthritis) Criteria
- To meet the CASPAR criteria a patient must have inflammatory articular disease (joint, spine, or entheseal) with 3 points from any of the following five categories :

.. Evidence of current psoriasis, a personal history of psoriasis, or fa family history of psoriasis.

2. Typical psoriatic nail dystrophy observed on current physical examination.

3. A negative test result for rheumatoid factor.

4. Either current dactylitis or a history of dactylitis recorded by a rheumatologist.

5. Radiographic evidence of juxtaarticular new bone formation in the hand or foot.

## 1754. Most common joint involved in gout is ?

a) Knee

b) Hip

c) MP joint of great toe

d) MP joint of thumb

Correct Answer - C
Ans. is 'c' i.e., MP joint of great toe
Gout is the common end point of a group of disorders that produce hyperuricemia.
**It** *is* marked by transient attacks of acute arthritis intitiated by crystallization of **monosodium urate** into the joints, leading eventually to **chronic gouty arthritis** and deposition of masses of urates in joints and other sites, creating tophi.
*Most common joint involved in gout is big toe, i.e. metatarsophalangeal joint of great toe.*
Tophi are pathognomic of gout. They are formed by large aggregations of urate crystals. The **urate crystals** are surrounded by -

## 1755. Which joint is most commonly affected in pseudogout -

a) Knee

b) Hip

c) MP joint great toe

d) MP joint thumb

Correct Answer - A
**Ans. is 'a' i.e., Knee**
**Pseudogout**
**It** is one of the forms of *"Calcium pyrophosphate dihydrate" (CPPD) arthropathy.*
Pseudogout commonly *involves the larger joints. Knee joint is most commonly involved;* other sites are wrist, elbow, shoulder, ankle.
Involvement of small joints is uncommon.
Age group is > 60 yrs.
In CPPD arthropathy, CPPD deposition occurs in *articular tissues.* It can present in any of the following three forms *:?*
*1) Asympatomatic chondrocalcinosis*
*2) Acute synovitis - Pseudogout*
*3) Chronic pyrophosphate arthropathy*
The radiologic hallmark of CPPD is *"chondrocalcinosis.*
Chondrocalcinosis is seen as punctate and/or linear radiodense deposits in fibrocartilaginous joint menisci or articular hyaline cartilage.
Definitive diagnosis is made by *synovial fluid polarised light microscopy which shows weakly positive, birefringent, rhomboid crystals of CPPD.* [In gout polarized light shows - strongly negative birefringent, needle shaped crystals of monosodium urate]

## 1756. Needle shaped crystals negatively birefringent on polarized microscopy is characteristic of which crystal associated arthropathy?

a) Gout

b) CPPD

c) Neuropathic arthropathy

d) Hemophilic arthropathy

Correct Answer - A
Ans. is 'a' i.e., Gout

- Crystal of Pseudogout
- Made up of *calcium pyrophosphate*
- *Weakly positive birefringent, rhomboid*

Crystal of gout :-

- Made up of uric acid (monosodium urate)
- *Strongly negative birefringent, needle shaped*

## 1757. Loose body in joint most common site is -

a) Knee

b) Hip

c) Elbow

d) Ankle

Correct Answer - A
Ans. is 'a' i.e., Knee
**Loose body in joint**
A loose body is a free-floating piece of bone, cartilage or foreign object in a joint.
*The knee is the most common joint where one would find a loose body.*
**Causes of loose bodies include :-**
i) Osteoarthritis
ii) Osteochondritisdessicans
iii) Osteochondral fracture(injury)
iv) Charcot's disease
v) Synovial chondromatosis

## 1758. Charcot's joint in diabetes affects commonly -

a) Shoulder joint

b) Knee joint

c) Hip joint

d) Tarsal joint

Correct Answer - D

**Answer- D. Tarsal joint**

- Tabes dorsalis → Knees, hip & ankles
- **Loose body in joint**
  - A loose body is a free-floating piece of bone, cartilage or foreign object in a joint.
  - *The knee is the most common joint where one would find a loose body.*
  - Causes of loose bodies include :-
    i) Osteoarthritis iii) Osteochondral fracture(injury) v) Synovial chondromatosis
    ii) Osteochondritisdessicans iv) Charcot's disease

## 1759. Most common site of metastasis in skeleton ?

a) Femur

b) Tibia

c) Vertebrae

d) Skull

Correct Answer - C
**Ans. is 'c' i.e., Vertebrae**
**Metastasis**

- *Metastatic bone disease is the commonest malignancy of bones* and is much more common than primary bone tumors.
- *The commonest sites for bone metastases are vertebrae (most common), pelvis, the proximal half of the femur and the humerus.*
- *Extremities distal to elbow and knee are least commonly involved sites.*
- Spread is usually via the blood stream; occasionally, visceral tumors spread directly into adjacent bones e.g., the pelvis and ribs.
- Certain tumors are known to be common sources of bone metastasis.
- The following primary tumors are the most common to metastasize in the bone; *breast, prostate, lung,* thyroid, kidney, and gastrointestinal tract.
- *The commonest source of metastatic bone disease is carcinoma of the breast.*
- *In males most common source is prostate carcinoma.*
- Bladder and uterine carcinomas are less common sources. In children, skeletal metastases originate from *neuroblastoma,* Ewing's sarcoma, and osteosarcoma.

## 1760. Calcification in osteosarcoma is due to presence of

a) Osteoid matrix

b) Osteoblasts

c) High calcium levels in serum

d) High calcitonin

Correct Answer - A
**Answer- A. Osteoid matrix**
The pattern of mineralization (calcification) on radiograph may be helpful in identifying tumor matrix.
Dense, homogenous mineralization (calcification) is typical of osteoid matrix, formed by benign and malignant bone-forming lesions
Calcified rings and arcs, dense punctate calcification, and flocculent calcification (small, loosely aggregated masses) are pattern of mineralization of chondroid matrix, formed by benign and malignant cartilage forming tumors.

## 1761. Sunray appearance on X - ray is seen in ?

a) Osteosarcoma

b) Osteochondroma

c) Osteoclastoma

d) Chondroblastoma

Correct Answer - A
Ans. is 'a' i.e., Osteosarcoma

- *Codman's triangle and sunray appearance are typical of osteosarcoma.*
- However, you should keep in your mind following very important facts : -
- *Sunray (sunburst) appearance* and *codman's triangle* indicates periosteal reaction (periosteal new bone formation).
- Both these are typical of *osteosarcoma* but may also occur in other rapidly growing bone tumors *(Ewing's sarcoma),* and *infection (osteomyelitis).*
- Similarly, *onion peel appearance* indicates periosteal new bone-formation and is typical for *Ewing's sarcoma.* But this can also occur in *oseosarcoma and osteomyelitis.*
- The crux is that, aggresively growing tumors and infection stimulate the periosteum which then react by forming new bone, (therefore it is called periosteal reaction) which may take any of the above form.

## 1762. In osteogenic sarcoma predominant histological finding is ?

a) Giant cells

b) Osteoid forming tumor cells

c) Fibroblastic proliferation

d) Chondroblasts

Correct Answer - B

**Ans. is 'b' i.e., Osteoid forming tumor cells**

**Histologic appearance of osteosarcoma**

- It appears pale and extending through the cortex on gross cut section examination.
- On histological sections it consists of malignant stromal tissue showing osteoid formation.
- Osteoid bone formation by tumor cells is diagnostic of OGS.

## 1763. Development of Chondrosarcomas is related with?

a) Maffucci syndrome

b) Felty syndrome

c) a and b both

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Maffucci syndrome
Chondrosarcomasdeveloping in patients with ollier's and maffucci syndrome is called secondary chondrosarcoma.
Secondary chondrosarcoma

- It is the chondrosarcoma arising in benign precursor either osteochondroma and enchondroma.
- There are no reliable figures about the risk of developing secondary chondrosarcoma in benign precursors.
- The risk of chondrosarcoma in solitary osteochondroma is 2% and that for osteochondromatosis is 5 - 25%.
- Patients with ollier's disease and maffucci syndrome have a 25 - 30% risk of developing chondrosarcoma.

## 1764. Osteoid osteoma consists of -

a) Osteoblasts

b) Osteoclasts

c) Both of above

d) None of the above

Correct Answer - C
**Ans. is 'c' i.e., Both of above**
**Osteoid Osteoma**

- Osteoid osteoma is the *most common true benign tumor of the bone.* This is a benign circumscribed lesion that may arise in the cortex of long bones or occasionally in the cancellous bone of spine. The characteristic feature is the formation of a *small nidus of osteoid tissue, surrounded by a reactive zone of dense sclerosis (Sclerotic new bone formation).*
- Microscopically, the tumor is composed of thin, irregular, trabeculae within a cellular granulation tissue containing osteoblasts and osteoclasts.Trabeculae are more mature in the center, which is often partially calcified. Reactive, sclerotic bone surrounds the nidus.

**Clinical features of osteoid osteoma**

- The tumor occurs between *10-30 years of age* and is more common in males.
- The diaphysis of long bones is involved, most common bone involved is the *tibia* followed by *femur.* Posterior elements of the vertebrae may also be involved.
- The presenting complaint is a nagging pain, worst at night, and is *relieved by salicylates* or *other NSAIDs, a diagnostic feature.*
- On X-ray, there is a *small radiolucent area (nidus) surrounded by dens sclerosis.*

- X-ray, in some cases, *show local sclerotic thickening of the shaft that may obscure the small central nidus within the area of rarefaction.*
- Bone scan shows increased uptake in the nidus.
- The only treatment is *wide en block excision along with internal fixation with or without bone grafting.*

## 1765. Which is the commonest true benign bone tumor?

a) Osteoid osteoma

b) Hemangioma

c) Osteochondroma

d) Enchondroma

Correct Answer - A
Ans. is 'a' i.e., Osteoid osteoma

- Osteoid osteoma is the *most* ***common true benign tumor of the bone.*** **This is a benign circumscribed lesion that may arise in** the cortex of long bones or occasionally in **the cancellous bone of spine. The characteristic feature is the formation of a *small*** *nidus of osteoid tissue, surrounded* ***by a reactive zone of dense sclerosis (Sclerotic new bone formation).***

## 1766. Deformity of hip in stage of tubercular synovitis stage is ?

a) Flexion, abduction external rotation

b) Flexion, adduction internal rotation

c) Flexion adduction external rotation

d) Flexion abduction internal rotation

Correct Answer - A
Ans. is 'a' i.e., Flexion, abduction external rotation
Synovitis- Flexion abduction external rotation apparent lengthening

## 1767. Perkin's line on X-ray is used for diagnosis of -

a) Perthe's disease

b) CDH

c) CTEV

d) AVN Hip

Correct Answer - B

**Ans. is 'b' i.e., CDH**

**Radiological features of DDH/CDH**

- In *Von Rosen's view* following parameters should be noted
- Perkin's line : Vertical line drawn at the outer border of acetabulum
- Hilgenreiner's line : Horizontal line drawn at the level of tri-radiate cartilage
- Shenton's line : Smooth curve formed by inferior border of neck of femur with superior margin of obturator foramen.
- Acetabular index : Normally is S 30°
- CE angle of Wiberg : Normal value is 15-30"
- *Normally the head lies in the lower and inner quadrant* formed by two lines (Perkin's & Hilgenreiner's). *In DDH the head lies in outer & upper quadrant*
- *Shenton* "s *line is broken*
- Delayed appearance & retarded development of ossification of head of femur
- Sloping acetabulum
- *Superior & lateral displacement of femoral head*

**Von-Rosen's line**

- This is a line, which helps in the diagnosis of DDH in infants *less than 6 months.*

- For this AP view of pelvis is taken with both lower limb in $45^0$ abduction and full internal rotation.
- Upward prolongation of long axis of shaft of the femur points towards the lateral margin of the acetabulum and crosses the pelvis in the region of sacroiliac joint.
- In CDH, upward prolongation of this line points towards anterior superior iliac spine and crosses the midline in the lower lumber region → *Positive Von-Rosen's sign.*

## 1768. Ortolani test is positive when the examiner hears the ?

a) Clunk of entry on abduction and flexion of hip

b) Clunk of entry on extension and adduction of hip

c) Click of exit on abduction and flexion of hip

d) Click of exit on extension and adduction of hip

Correct Answer - A

**Ans. is 'a' i.e., Clunk of entry on abduction and flexion of hip**

**Clinical tests for CDH/DDH**

- In *infancy* two tests are used.
- Barlow's test
- This test is done within *2-3 days of birth.*
- The test has two parts *:?*

.. *Part 1 :-* Infant is in supine position with hip and knee in 90° of flexion, *The hip is slowly adducted & pushed* to dislocate the hip and one can hear a clunck of exit of femoral head out of the acetabulum.

2. *Part 2 :-* Now the hip is *gently abducted and pulled* to reduce the hip. This will cause 'clunk' indicating reduction of hip.

- It is quite obvious that part 1 can be done only dislocatable hip; but not in already dislocated hip as the head is already out of the acetabulum.

**Ortolani's test**

- This test is similar to 2$^{nd}$ part of Barlow's test, i.e. slow abduction of hip in flexed position of hip & knee to reduce the hip.

## 1769. The typical deformity in CTEV is ?

a) Ankle equinus

b) Subtalar inversion

c) Forefoot adduction

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above
CTEV is the commonest and most important congenital deformity of the foot.
CTEV is *more common males in* than in females (males to female ratio 2·5 : 1).
In half of the cases CTEV is bilateral.
Right and left foot are affected equally.
The deformity consists of following elements *:?*
*i) Equinus,* i.e. Plantar flexion at ankle joint (tibiotalar joint).
*ii) Inversion of foot* at subtalar joint (talocalcaneal joint).
*iii) Forefoot adduction,* at mid-tarsal joints, especially at talo-navicular joint.
iv) Sometimes *forefoot cavus,* i.e. excessive arching of the foot at mid-tarsal joints.

## 1770. Cozen's test is used for the diagnosis of ?

a) Tennis elbow

b) Golfer's elbow

c) Base baller's pitcher elbow

d) Carpal tunnel syndrome

Correct Answer - A

**Ans. is 'a' i.e., Tennis elbow**

**Signs and Tests**

- Adson's test : for thoracic outlet syndrome
- Allen's test : for testing patency of radial and ulnar arteries
- Alli's test : for CDH
- Anvil test : for testing tenderness of the spine
- Ape thumb : for median nerve injury
- Apley's grinding test :for meniscus injury
- Apprehension test : for recurrent dislocation of the shoulder
- Barlow's test : for CDH
- Blue sclera : Osteogenesis imperfecta
- Bryant's test : for anterior dislocation of the shoulder
- Callways' test : for anterior dislocation of the shoulder
- Chovstek's sign : for tetany
- Claw hand : for ulnar nerve injury
- Coin test : for dorso lumbar tuberculosis of spine
- Cozen's test : for tennis elbow
- Drawer test : for ACL and PCL injutries
- Anterior : for ACL injury
- Posterior : for ACL injury
- Finkelstein's test : for de Quervain's tenovaginitis

- Foot drop : for common peroneal nerve injury
- Froment's sign : for ulnar nerve injury
- Gaenslen's test: for SI joint involvement
- Galleazzi sign : for CDH
- Gower's sign : for musular dystrophy
- Hamilton ruler test : for anterior dislocation of the shoulder
- Kanavel's sign : for infection in ulnar bursa
- Lasegue's test: for disc prolapse
- Lachmann test : for ACL injury
- Ludloffs sign: for avulsion of lesser trochanter
- McMurray's test : for meniscus injury
- Nagffziger test : for disc prolapse
- Ober's test : for tight ilio- tibial band (e.g., in polio)
- O' Donoghue triad: traid of MCL, ACL & medial meniscus injuries occurring together
- Ortolani's test : for CDH
- Pivot shift test : for ACL injury
- Policeman tip : for Erb's palsy
- Runner's knee : Patellar tendinitis
- Sulcus sign: for inferior dislocation of the shoulder
- Thomas' test : for hip flexion deformity
- Trendelenburg's test: for unstable hip due to any reaseon (e.g., CDH)
- Tinel's sign: for detecting improving nerve injury
- Volkmann's sign : for ischaemic contracture of forearm muscles
- Wrist drop : for radial nerve injury

## 1771. Infection of ulnar bursa is diagnosed by -

a) Kanavel's sign

b) Chowstek's sign

c) Gower's sign

d) Ludloff's sign

Correct Answer - A
Ans. is 'a' i.e., Kanavel's sign

- Kanavel's sign is for infection of ulnar bursa.

## 1772. De - quervian's tenovaginitis involves ?

a) Abductor pollicislongus

b) Extensor pollicisbrevis

c) Both of the above

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Both of the above**

- De-Quervian's tenovaginitis is characterized by *pain over the styloid process of the radius* and palpable thickening in the course of the *abductor pollicis longus and extensor pollicis brevis tendons.*
- The *fibrous sheaths* of the abductor pollicis longus and extensor pollicis brevis tendons are thickened where they cross the tip of the radial syloid process.
- The tendons themselves appear normal as does the synovial lining of sheath.
- Exact cause is unknow. Excessive friction from overuse may be a factor, because the condition seems prone to follow repetitive actions such as wringing clothes, or in more recent times excessive typing or manipulations.
- The condition is five times *commoner in women* than men, predominantly in *middle age.*
- The main symptom is pain on using the hand, especially when movement tenses the abductor pollicis longus and extensors pollicis brevis tendons (as in lifting a saucepan or a teapot).
- On examination, there is local tenderness at the point where the tendons cross the radial styloid process.
- *The thickened fibrous sheath are usually palpable as firm nodule.*
- *Passive adduction of the wrist or thumb causes the patient to wince*

*with pain.*

- Finkelstein's test is used to diagnose De-Quervain's tenovaginitis.
- To perform the test, the patients ask to flex their thumb and clench their fist over the thumb followed by ulnar deviation. This produces sharp pain along the distal radius.

## 1773. Causes of Carpal tunnel syndrome are all except?

a) DM

b) RA

c) Leprosy

d) Gout

Correct Answer - C

**Ans. is 'c' i.e., Leprosy**

**Carpal tunnel syndrome**

- Carpal tunnel syndrome is the most common and widely known entrapment neuropathy in which the body's peripheral nerve is compressed or traumatized. Carpal tunnel syndrome occurs when the median nerve is compressed in the carpal tunnel below flexor retinaculum. The carpal tunnel is a narrow rigid passage way of ligament and bones at the base of hand, in front of distal part of wrist. Carpal tunnel houses the median nerve and 9 tendons (4 FDS, 4 FDP & FPL).

**Causes of carpal tunnel syndrome**

**There are many causes of carpal tunnel syndrome :**

*1)* *Idiopathic :* - This is the most common cause.

*2)* *Pregnancy* and menopause

*3)* *Metabolic :* - Gout, *Diabetes mellitus*

*4)* *Endocrine : - Hypothyroidism,* Myxedema, *Acromegaly,* Hyperparathyroidism.

*5)* *Deposition disorder Amyloidosis,* Sarcoidosis, *Rheumatid arthritis,* Leukemia, CRF, Mucopoly saccharoidosis.

*6)* *Alcoholism*

*7)* *Local causes :* - Malunited colle's fracture, osteo-arthritis of the

carpal bones, synovitits of flexor tendon sheath, hematoma.

**Clinical features of carpal tunnel syndrome**

Carpal tunnel syndrome is *more common in women* and occurs between *35-50 years.*

Symptoms usually start gradually, with frequent burning, tingling, *paresthesia* and numbness in the distribution of median nerve, i.e., lateral three & half of fingers and lateral 2/3rd of palm.

The symptoms often first appear during night, since many people sleep with flexed wrists. (Flexion decreases the space in carpal tunnel which results in increased pressure over median nerve).

Sensory symptoms can often be reproduced by percussing over median nerve *(Tinel's sign)* or by holding the wrist fully flexed for a minute *(Phalen's test).*

As the disease progresses, clumsiness of hand and impairment of digital function develop.

Later in the disease, there is sensory loss in median nerve distribution and obvious *wasting of thenar eminence.* Clinical Tests for Carpal tunnel syndrome

There are some provocative tests which act as important screening methods : ?

*1)* Wrist flexion (Phalen's test) : - The patient is asked to actively place the wrist in complete flexion. If tingling and numbness develop in the distribution of median nerve, the test is positive. This is the *most sensitive provocative test.*

2) Tourniquet test : - A pneumatic BP cuff is applied proximal to the elbow and inflated higher than the patient's systolic BP. The test is positive if there is paresthesia or numbness in the region of median nerve distribution in hand.

*3) Median nerve percussion test (Tinel's sign) :* - The median nerve is gently tapped at the wrist. The test is positive if there is tingling sensation.

*4) Median nerve compression test :* - Direct pressure is exerted equally over both wrists by the examiner. If symptoms of carpal tunnel syndrome appear, the test is positive.

## 1774. Index finger infection spreads to ?

a) Thenar space

b) Mid palmar space

c) Hypothenar space

d) Flexion space

Correct Answer - A
Ans. is 'a' i.e., Thenar space
Thenar space communicates with the index finger while the mid palmar space communicates with the middle, ring and little fingers. Thus infection of index finger leads to thenar space infection while the infection of middle, ring or little finger leads to mid palmar space infection.

## 1775. Causes of painful arc syndrome is/ are ?

a) Supraspinatus tendinitis

b) Subacromial bursitis

c) Fracture of greater tuberosity

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

**<u>Painful Arc syndrome</u>**

- This is a clinical syndrome in which there is pain in the shoulder and upper arm during the mid range of glenohumeral abduction. Following are the common causes :

i. Minor tears of the supraspinatus tendon
i. Supraspinatus tendinitis
i. Calcification of supraspinatus tendon
/. Subacromial bursitis
/. Fracture of the greater tuberosity

- In all these conditions, the space between the upper - end of the humerus and the acrominon gets compromised, so that during mid - abduction the tendon of the rotator - cuff gets nipped between the greater tuberosity and acrominon.
- X- ray of the shoulder may show calcific deposit, or a fracture of the greater tuberosity or acromion. o Treatment consists of ultrasonics to the tender point and anti- inflammatory drugs.
- Some cases need an injection of hydrocortisone in the subacromial space or excision of the anterior, often prominent part of the acromion.

## 1776. Ring shaped epiphyses is seen in ?

a) Osteogenesis imperfecta

b) Morquios syndrome

c) Zellweger syndrome

d) Multiple epiphyseal dysplasia

Correct Answer - A
Ans. is 'a' i.e., Osteogenesis imperfecta
Ring shaped epiphysis
i) Hypothyroidism (healing phase)
ii) Osteogenesis imperfecta
iii) Osteopetrosis
iv) Osteoporosis
v) Rickets (healing phase)
vi) Scurvy

## 1777. Fat embolism syndrome is most commonly seen after ?

a) Femur fracture

b) Acetabular fracture

c) Pelvis fracture

d) Calcaneal fracture

Correct Answer - A
Ans. is 'a' i.e., Femur fracture
*Fat embolism* means circulation of fat globule away from its site of origin.
When fat embolism causes symptoms it is called fat embolism syndrome.
**Causes of fat embolism**
1. *Fracture of long bone (most common)* - Blunt trauma
2. Recent Corticosteroid administration
3. Soft tissue trauma
4. Acute pancreatitis
5. Burns
6. D.M.
7. Parenteral lipid infusion
8. Liposuction
9. Sickle cell crisis
10. Decompression sickness

## 1778. Most common cause of acute compartment syndrome in children is ?

a) Fracture supracondylar humerus

b) Transphysealhumerus fracture

c) Fracture radius /ulna

d) Fracture shaft humerus

Correct Answer - A

**Ans. is 'a' i.e., Fracture supracondylar humerus**

**Compartment syndrome is most commonly caused by extremity fractures :-**

i. Supracondylar fracture of humerus is the most common cause is children.
i. Crush injuries to forearm are the most common cause in adults.
i. Other injuries are fracture both bones forearm, elbow dislocation.

## 1779. Z score measures the bone mineral density compred to ?

a) Age, Race and sex matched individuals

b) Race and sex matched individuals

c) Sex matched individuals

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Age, Race and sex matched individuals
T Score and Z score are the measures of bone mineral density.
Z score : Measures the bone mineral density in terms standard deviation from the mean bone mineral density of age, race and sex matched individuals.
T score : Measures the bone mineral density in terms standard deviation from the mean bone mineral density of race and sex matched individuals of normal younger age group.

## 1780. Sectoral sign is positive in ?

a) Avascular necrosis of femur head

b) Osteoarthritis of hip

c) Protrusio acetabuli

d) Slipped capital femoral epiphyses

Correct Answer - A
Ans. is 'a' i.e., Avascular necrosis of femur head
**Clinical features of AVN**
In the earlier stages of AVN, the patient is asymptomatic, and by the time patient presents, the lesion is well advanced.
**Common histories patient gives (Any of the following) : -**
*i) Dislocation of Hip*
*ii) Alcoholism*
*iii) Steroid intake for any disorder*
*iv) Nephrotic syndrome*
*Pain is a common complaint.* Pain is felt in the grain and may radiate to knee.
*Decreased range of motion especially internal rotation followed by abduction.*
*Sectoral sign or Differential rotation :* - Internal rotation is possible in extended position of hip, but as seen as the hip is flexed to 90° no internal rotation is possible. This is the characteristic sign of AVN. o
*Limp with antalgic gait.*
*Trendelenberg's test positive.*

## 1781. Keinbock's disease is osteochondritis of ?

a) Scaphoid

b) Lunate

c) Calcaneum

d) Tibial tuberosity

Correct Answer - B
Ans. is 'b' i.e., Lunate

- Perthes's disease- Femoral head
- Panner's disease- Capitulum
- Kienbock's disease- Lunate bone
- Osgood Shlatter's disease- Tibial tubercle
- Sever's disease- Calcaneal tuberosity
- Kohler's disease- Navicular bone

## 1782. Osteoporosis is characterized by all the following except ?

a) Decreased bone mineral density

b) Decreased Serum Calcium, phosphorus and alkaline phosphatase is seen

c) Glucocorticoids can cause osteoposis

d) Dorsolumbar spine is the most coomon site of osteoporotic fracture

Correct Answer - B
Ans. is 'b' i.e., Decreased Serum Calcium, phosphorus and alkaline phosphatase is seen
Osteoporosis is a state of decreased mass per unit volume of a normally mineralized bone. Osteoporosis is the *commonest metabolic bone disease.* Osteoporosis is characterized by an *abnormally low bone mass (low bone density)* and defects in bone structure, a combination of which renders the bone unusually fragile and at greater than normal risk of fracture. Bone depletion may be brought about by predominant bone resorption, decreased bone formation or a combination of the two.

## 1783. Polyspermy is inhibited by which ion ?

a) Ca

b) Na

c) K

d) Cl

Correct Answer - A
**Ans, A. Ca**
The calcium wave amplifies the local signal at the site of sperm-oocyte interaction and distributes it throughout the oocyte cytoplasm. The increase in calcium concentration is the signal that causes the oocyte to resume cell division, initiating the completion of meiosis II and setting of the developmental programme that leads to embryogenesis.

## 1784. Which of the following is present in normal vagina?

a) Trichomonas buccalis

b) Trichomonas hominis

c) Trichomonas vaginalis

d) Trichomonas bovis

Correct Answer - C
**Ans. C. Trichomonas vaginalis**

## 1785. Maximum amniotic fluid at ?

a) 32 weeks

b) 34 weeks

c) 36 weeks

d) 40 weeks

Correct Answer - C
**Ans, C. 36 weeks**

## 1786. At 20 weeks of gestation amniotic fluid volume is ?

a) 200 ml

b) 400 ml

c) 600 ml

d) 800 ml

Correct Answer - B
**Ans, B. 400 ml**

## 1787. Fertilized ovum reaches the uterus at what day of menstrual cycle?

a) 6th

b) 14th

c) 20th

d) 25th

Correct Answer - C
**Ans, C. 20th**
Implantation of the fertilized ovum occurs in the endometrium of the anterior or posterior wall of the body near the fundus on the & ilay of fertilization which corresponds to the 20th day of the regular menstrual cycle.

**1788.**

## Fertilization usually occurs in which part of fallopian tube?

a) Fimbrial end

b) Ampulla

c) Interstitium

d) Isthmus

Correct Answer - B
**Ans. B. Ampulla**
Fertilization is the process of fusion of the spermatozoon with the mature ovum.
It begins with sperm egg collision and ends with production of a mononucleated single cell called the zygote.
**Its objectives are:**
1. To initiate the embryonic development of the egg and
2. To restore the chromosome number of the species.

Almost always, fertilization occurs in the ampullary part of the uterine tube.

## 1789. Physiologic change in leukocyte numbers in pregnancy is

a) Neutrophilic leukocytosis

b) Lymphocytic leukocytosis

c) Neutropenia

d) Basophilic leukocytosis

Correct Answer - A

**Ans. A. Neutrophilic leukocytosis**

Physiological change observed in leukocyte numbers in pregnancy is neutrophilic leukocytosis.

It occurs to the tune of 8000/mm3 and may upto 20,000/ mm3 in labour.

The increase maybe due to the rise in levels of estrogen and cortisol.

## 1790. Weight of uterus at term is ?

a) 400-500 gm

b) 600-700gm

c) 800-900 gm

d) 900-1000 gm

Correct Answer - D
**Ans. D. 900-1000 gm**
The uterus in the non-pregnant state weight is about 60 gm, with a cavity of 5 - 70 ml and measures about 7.5 cm in length.
At term it weighs about 900 - 1000 gm and measures 35 cm in length.

## 1791. During pregnancy estrogen causes which of the following?

a) Growth of ducts of breasts

b) Growth of alveoli of breasts

c) Both a and b

d) None of the above

Correct Answer - C

**Ans. C. Both a and b**

The increased size of the breasts is evident in the early weeks of pregnancy.

The increase in size is due to hypertrophy and proliferation of the ducts and the alveoli.

Estrogen is responsible for the hypertrophy and proliferation of the ducts and alveoli while progesterone is only responsible for the hypertrophy and proliferation of the alveoli.

## 1792. Maternal side layer of the placenta is called ?

a) Decidua basalis layer

b) Decidua capsularis layer

c) Decidua parietalis

d) Decidua spongiosa

Correct Answer - A
**Ans., A. Decidua basalis layer**
Decidua basalis (Decidual plate) is the part of endometrium related to embryonic pole of conceptus and forms the maternal p art of placenta.

## 1793. Which of the following is not a physiological change of pregnancy in urinary bladder?

a) Edematous mucosa

b) Increased frequency at 14 weeks

c) Stress incontinence

d) Pressure on bladder in late pregnancy

Correct Answer - B

**Ans.B. Increased frequency at 14 weeks**

**Physiological changes in bladder in pregnancy**

- Marked congestion and hypertrophy of the muscles and elastic tissues of the bladder wall.
- Edematous bhdder mucosa in late pregnancy especially in primigravida.
- Increased frequency of micturition at 6 - 8 weeks which subsides by 12 weeks and reappears in late pregnancy due to pressure of the gravid uterus on bladder.
- Stress urinary incontinence in late pregnancy.

## 1794. Urinary retention earliest in pregnancy is seen at ?

a) 10 weeks

b) 18 weeks

c) 22 weeks

d) 34 weeks

Correct Answer - A
**Ans, A. 10 weeks**
Urinary retention in pregnancy is rare
It is classically described in some women with retroverted uterus, which becomes impacted in the pelvis, usually seen earliest between 8 - 12 weeks of pregnancy and causes outflow obstruction.

## 1795. Beta HCG is detected earliest by which day of conception?

a) 8 days

b) 15 days

c) 21 days

d) 30 days

Correct Answer - A
**Ans, A. 8 days**
hCG is a glycoprotein produced by the syncytiotrophoblast.
hCG-c is identical to the c subunit of LH, FSH, and TSH.
Its presence in the urine in early pregnancy is the basis of the various laboratory tests for pregnancy, and it can sometimes be detected in the urine as early as 14 d after conception and in serum as early as 8-9 days,

## 1796. Doubling time of beta HCG in early pregnancy is ?

a) 24 hrs

b) 48 hrs

c) 72 hrs

d) 96 hrs

Correct Answer - B
**Ans, B. 48 hrs**
Beta hCG usually double about every 2 days (48 hours) during first four weak of pregnancy.
As pregnancy progresses, doubling time becomes longer. By 6-7 weeks beta hCG levels may take as long as 3.5 days to double.

## 1797. Tubal patency test in which phase of the menstrual cycle?

a) Menstrual

b) Preovulatory

c) Leuteal

d) Premenstrual

Correct Answer - B
**Ans, B. Preovulatory**
The testing of tubal patency and detecting tubal pathology are done in pre-ovulatory phase of the menstrual cycle.
If performed in the post-ovulatory period, insufflation might disturb an implanted or fertilized ovum and may also cause pelvic endometriosis.

## 1798. Following physiological changes are seen in vagina in pregnancy except ?

a) Jacquimiers sign

b) Increased length of anterior vaginal wall

c) pH acidic

d) Decreased number of navicular cells

Correct Answer - D

**Ans, D. Decreased number of navicular cells**

The vaginal walls become hypertrophied, edematous and more vascular.

Increased blood supply to venous plexus surrounding the walls gives bluish coloration of the mucosa (Jacquemier's sign).

The length of the anterior vaginal wall is increased.

The secretion of vagina becomes copious, thin and curdy white, due to marked exfoliated cells and bacteria.

The pH becomes acidic (3.5 - 6) due to more conversion of glycogen into lactic acid by lactobacillus acidophilus consequent on high estrogen level.

The acidic pH prevents multiplication of pathogenic organisms.

There is predominance of navicular cells in cluster and plenty of lactobacilli.

## 1799. FHS can be usually heard by stethoscope at ?

a) 14 weeks

b) 18 weeks

c) 22 weeks

d) 26 weeks

Correct Answer - B
**Ans, B. 18 weeks**
Fetal heart sound (FHS) is most conclusive clinical sign of pregnancy. With an ordinary stethoscope it can be detected between 18 - 20 weeks of PregnancY.

## 1800. What is the fetoplacental relationship at 24 weeks of gestation?

a) 3

b) 4

c) 5

d) 6

Correct Answer - A
**Ans, A. 3**
The relationship between the fetal and placental weights can be studied by the so called fetoplacental relationship (fetal weight/ placental weight ratio).
The fetoplacental relationship increases as the pregnancy advances.

## 1801. Down syndrome is earliest diagnosed at ?

a) 8 - 10 weeks

b) 10 - 12 weeks

c) 12 - 14 weeks

d) 14 - 16 weeks

Correct Answer - B

**Ans. B. 10 - 12 weeks**

Earliest diagnosis of genetic defects can be done by use of chorionic villous sampling.

Chorionic villous sampling is carried out transcervically at 10 - 12 weeks and transabdominally from 10 weeks to term.

## 1802. Chorionic villus biopsy is done earliest in which week of gestation ?

a) 9 weeks

b) 11 weeks

c) 13 weeks

d) 15 weeks

Correct Answer - B
**Ans, B. 11 weeks**
It is carried out transcervically between 7O - 12 weeks and transabdominally from 10 weeks to term.

## 1803. When is folic acid started in pregnancy ?

a) 4 weeks prior to conception

b) 8 weeks prior toconception

c) 4 weeks after conception

d) 8 weeks after conception

Correct Answer - A
**Ans. A. 4 weeks prior to conception**
Folic acid supplementation (4mg/day) is stated 4 weeks prior to conception and continued upto 12 weeks of pregnancy.
This can reduce the incidence of neural tube defects.

## 1804. Term placenta weight to Baby weight ratio is ?

a) 1 : 3

b) 1 : 4

c) 1 : 5

d) 1 : 6

Correct Answer - D

**Ans, D. 1 : 6**

**The term Placenta**

- Placenta at term is a circular disc with a diameter of 15 - 20 cm.
- It has thickness of 3 cm at center and thins of towards the edges.
- It feels spongy and weighs about 500 gm.
- The ratio of placemat weight at term and the baby weight is 1:6.
- It occupies about 30% of the uterine wall.

## 1805. First trimester diagnosis for anencephaly is by increased?

a) Alpha feto protein in maternal serum

b) Alpha feto protein in amniotic fluid

c) Beta HCG in maternal serum

d) Beta HCG in amniotic fluid

Correct Answer - B

**Ans, B. Alpha feto protein in amniotic fluid**

In the first half of the pregnancy the diagnosis of anencephaly is made by elevated alpha feto protein in amniotic fluid and confirmed by sonography.

## 1806. Which of the following is true about EDD ?

a) Less than 10% of deliveries occur on EDD

b) Less than 20% of deliveries occur on EDD

c) 80% of the deliveries occur on EDD

d) 90% of the deliveries occur on EDD

Correct Answer - A
**Ans, A. Less than 10% of deliveries occur on EDD**
Fewer than 5% of all the pregnancies end on the expected date of delitery (EDD).
13% of the births occur preterm.
5 - 7% of the pregnancies are delivered post term.
Majority of the deliveries occur within 7 days of EDD.

## 1807. a) Most common position of engagement in vertex presentation?

a) LOA

b) ROA

c) LOP

d) ROP

Correct Answer - A
**Ans, A. LOA**
Vertex occupying the left anterior quadrant of the pelvis is the commonest and is called left occipito -anterior position.

## 1808. Which is the engaging diameter in occipitoposterior nresentation?

a) Suboccipito frontal

b) Mento vertical

c) Submentovertical

d) Bitrochanteric

Correct Answer - A
**Ans, A. Suboccipito frontal**

## 1809. Which is the most common presentation in twin pregnancy?

a) Vertex - vertex

b) Vertex - breech

c) Breech - Breech

d) Vertex - Footling

Correct Answer - A
**Ans. A. Vertex - vertex**

**1810. Direct Occipitoposterior position is a favourable position in which type of pelvis ?**

a) Anthropoid

b) Android pelvis

c) Gynaecoid

d) Mongoloid

Correct Answer - A
**Ans, A. Anthropoid**
Direct Occipitoposterior position is a favourable position in anthropoid type of pelvis.

## 1811. Persistent OP position is most common in which pelvis?

a) Android

b) Gynaecoid

c) Anthrpoid

d) Mixed

Correct Answer - A
**Ans, A. Android**
With android type of pelvis the occipitoPosterior position is common due to funnel shape of the pelvis.

## 1812. Contraindication for induction of labour is all except?

a) Hypertensive disease of pregnancy

b) Heart disease of pregnancy

c) Pelvic tumor

d) Vasa previa

Correct Answer - A
**Ans. A. Hypertensive disease of pregnancy**
Hypertensive disease of pregnancy is an indication for induction of labour. Other three are contraindications.

## 1813. Medical management of ectopic pregnancy has decreased success if ?

a) Gestational sac < 3cm

b) Duration of gestation < 5 weeks

c) Cardiac activity present

d) Beta HCG < 8000 IU/L

Correct Answer - C

**Ans. C. Cardiac activity present**

**Medical management of an ectoPic Pregnancy is done when :**

- Patient is hemodynamically stable
- No evidence of acute intra abdominal bleeding
- Ready to comply with follow up care
- Serum beta HCG < 10,000 IU/L
- Absent embryonic heart activity
- Diameter of ectopic gestational mass less than 4 cm.

## 1814. All are the prognostic factors of Boer-meisel system except -

a) Extent of adhesions

b) Thickness of tubal wall

c) Size of hydrosalpinx

d) Infecting organism

Correct Answer - D

**Ans, D. Infecting organism**

**Boer-meisel system of prognostic classification for chronic pelvic inflammatory disease includes:**

- Extent of adhesions
- Nature of adhesions flimsy or dense
- Size of hydrosalpinx
- Macroscopic condition of hydrosalpinx
- Thickness of tubal wall

## 1815. Pregnant uterus will compress ureters at ?

a) Pelvic brim

b) Uterovesical junction

c) Trigone

d) Ureterovesical junction

Correct Answer - A
**Ans, A. Pelvic brim**
Ureters become atonic due to high progesterone level in pregnancy, Dilatation of the ureter above the pelvic brim with stasis is marked on the right side especially in the primigravidae.
It is due to deoxtrorotation of the uterus pressing the right ureter against the pelvic brim and abo due to pressure by right ovarian vein, which crosses the right ureter at right angle.

## 1816. Following is given to a patient with pre term labour exept -

a) Glucocorticoids

b) Tocolytic drugs

c) Antibiotics

d) Beta blocker

Correct Answer - D
**Ans. D. Beta blocker**
Tocolytic drugs [Note: betamimetic and not beta blocker is a tocolytic]

## 1817. Most common cause of tenth day post partum bleeding?

a) Retained bits of membrane

b) Infection

c) Endometritis

d) Blood coagulopathy

Correct Answer - A
**Ans. A. Retained bits of membrane**
Postpartum hemorrhage (PPH) is defined as blood loss of more than 500 ml following birth of baby.

**1818. A multgravida 4 kg fetus is in labour since 15 hours and has 5cm dilation of cervix for last 8 hours. What is the further management of this patient ?**

a) Wait and watch

b) Amniotomy

c) Injection Oxytocin

d) Caesarian section

Correct Answer - D
**Ans. D. Caesarian section**

## 1819. The treatment of choice for bartholin cyst is ?

a) Marsupilisation

b) Aspiration

c) Observe

d) Curettage and closure

Correct Answer - A

**Ans. A. Marsupilisation**

**Bartholin's cyst**

- Bartholin's cyst is formed when duct of bartholins gland is blocked either by inflammation or by inspissated secretion.
- It appears as a swelling on the inner side of the junction of the anterior two-thirds with the posterior one-third of the labium majus.
- A small cyst remains asymptomatic, but a larger one bulges across the vaginal introitus and causes dyspareunia, discomfort and may get infected when it needs excision or marsupialization

## 1820. Gartner's cyst are seen at ?

a) Antero lateral vaginal wall

b) Antero - lateral cervix

c) Posterolateral vaginal wall

d) Posterolateral cervix

Correct Answer - A
**Ans, A,'. Antero lateral vaginal wall**
Gartners duct cyst arises from the remnants of the mesotephric duct and lies in the anterolateral aspect of vaginal wall.

## 1821. Most common cause of death of baby in vasa previa is?

a) Infection

b) Maternal exanguination

c) Fetal exanguination

d) Both b and c

Correct Answer - C

**Ans, C. Fetal exanguination**

**Vasa previa**

- In it a leash of blood vessels happen to traverse through the membranes overlying the internal os, in front of presenting part.
- Rupture of membranes involving the overlying vessels leads to vaginal bleeding.
- As it is entirely fetal blood, this may result in fetal exanguination and even death.

## 1822. Sheehan syndrome is ?

a) Pitutary adenoma

b) Pitutary necrosis

c) Adrenal necrosis

d) Adrenal adenoma

Correct Answer - B
**Ans., B. Pitutary necrosis**
Sheehan's syndrome is anterior pituitory necrosis following severe PPH, shock or severe infection.

## 1823. Most common cause of menorrhagia in adolescents?

a) Thyroid disorder

b) Coagulation disorders

c) Leiomyomas

d) Polyps

Correct Answer - B
**Ans, B. Coagulation disorders**
In adolescent age group, abnormal uterine bleeding results from anovulation and coagulation defects at disproportionately higher rates compared with older reproductive-aged women
Coagulation disorders account for 20% of cases of menorrhagia in adolescents.

## 1824. Not associated with endometrial hyperplasia ?

a) PCOD

b) Glucose intolerance

c) HRT

d) Unopposed exposure to progesterone

Correct Answer - D

**Ans. D. Unopposed exposure to progesterone**

**Following are the causes of endometrial hyperplasia**

- Follicular cysts of ovary
- PCOD
- Granulosa and theca cell tumors of ovary
- HRT
- Glucose in tolerance
- Unopposed exposure to estrogen (endogenous or exogenous)

## 1825. Following are the causes of maternal deaths in patients with hypertensive disorder of pregnanacy except ?

a) Cardiac failure

b) ARDS

c) Chronic renal failure

d) Cerebral hemorrhage

Correct Answer - C

**Ans. C. Chronic renal failure**

**Causes of maternal deaths in cases of hypertensive disorders of pregnancy are**

- Cardiac failure
- Cerebral hemorrhage
- ARDS
- Puerperal sepsis
- Pulmonary edema
- Acute renal failure
- Pulmonary embolism
- Aspiration and/or septic pneumonia
- Cardio-pulmonary arrest
- Post-partum shock

## 1826. Classical name of mid cycle abdominal pain with vaginal bleeding is called ?

a) Endometriosis

b) Mittelschmez

c) Meteropathiahemorrhagica

d) Menometrorrhagia

Correct Answer - B
**Ans. B. Mittelschmez**
Mittelschmerz is a mid-cycle pain, not lasting more than 12-24 hours, around ovulation. Pain is located in one of the iliac fossa and may be accompanied with vaginal bleeding.

## 1827. Following is true about leuteoma of pregnancy ?

a) Usually bilateral

b) It is a benign self limiting condition

c) It consists of leutenized cells

d) All the above

Correct Answer - D

**Ans. D. All the above**

**Leuteoma of Pregnancy**

- It usually appears as bilateral, multinodular, solid masses in ovaries.
- It is characterized by replacement of normal ovarian parenchyma by solid proliferation of leutenized stromal cells under influence of human chorionic gonadotroPin.
- It is benign self-limiting condition and requires no treatment.

## 1828. Clinical alarming sign of $MgSO_4$ toxicity is ?

a) Loss of knee jerk

b) Loss of superficial abdominal reflexes

c) Loss of pin prick sensation

d) Loss of proprioception

Correct Answer - A
**Ans. A. Loss of knee jerk**

## 1829. False about MgSo4 is ?

a) Not used as antihypertensive

b) Its dose is different for eclampsia and preeclampsia

c) Deep tendon reflexes is monitored for toxicity

d) It acts as a membrane stabilizer and neuroprotector

Correct Answer - B
**Ans. B. Its dose is different for eclampsia and preeclampsia**
Dose of magnesium sulphate for management of pre-eclampsia and eclampsia is the same.

**1830. 18 weeks pregnancy of a lady, last two times history of midtrimester abortion, which was painless. What is the diagnosis ?**

a) Incompetent os

b) Chromosomal abnormality

c) Bivalve uterus

d) Progesterone deficiency

Correct Answer - A

**Ans. A. Incompetent os**

Most common cause of second trimester pregnancy loss is cervical incompetence, in which patient presents with recurrent painless abortion.

## 1831. Following are the features of true labour pain ?

a) Uterine contractions at regular intervals

b) Progressive effacement and dilation of cervix

c) Formation of bag of membranes

d) All the above

Correct Answer - D

**Ans. D. All the above**

**Features of true labour Pains**

- Uterine contractions at regular intervals
- Frequency of contractions increase gradually
- Intensity and duration of contractions increase progressively
- Associated with show
- Progressive effacement and dilation of cervix
- Descent of the presenting part
- Formation of bag of forewaters
- Not relieved by enema and sedatives

## 1832. HRT improves ?

a) Bone density

b) Demetia

c) Coronary artery disease

d) Endometrial cancer

Correct Answer - A
**Ans, A. Bone density**
Hormone replacement therapy improves bone density,

## 1833. Most common risk factor for rupture of scarred uterus is

a) Use of oxytocin in labour

b) Grand multiparity

c) Forceps application

d) Obstructed labour

Correct Answer - A

**Ans, A. Use of oxytocin in labour**

The most common cause of rupture of scarred uterus k use of high doses of oxytocin for the augmuntation of labour.

## 1834. Invalueable tool in the diagnosis of chronic pelvic pain is ?

a) Endometrial biopsy

b) Ultrasound

c) Laparoscopy

d) Colposcopy

Correct Answer - C
**Ans, C. Laparoscopy**
Laproscopy is an invalueable diagnostic tool in the investigation of chronic pelvic pain.

**1835. Most common site of ectopic pregnancy is ?**

a) Ovary

b) Fallopian tube

c) Peritoneum

d) Cervix

Correct Answer - B
**Ans. B. Fallopian tube**

## 1836. Least common site of ectopic pregnancy in fallopian tubes is ?

a) Interstitium

b) Ampulla

c) Infundibulum

d) Isthumus

Correct Answer - A
**Ans, A. Interstitium**
Most common site for ectopic pregnancy fallopian tubes,

## 1837. Criteria for Puerperal pyrexia is temperature ?

a) 100.4 degrees F on two separate occasions

b) 101 degrees F on two separate occasions

c) 100.4 degrees F on three separate occasions

d) 101 degrees F on three separate occasions

Correct Answer - A
**Ans, A. 100.4 degrees F on two separate occasions**
**Puerperal pyrexia**

- A rise of temperature reaching 100.4 degrees F (38 degrees C) or more (measured orally) on two separate occasions at 24 hours apart (excluding first 24 hours) within first 10 days following delivery is called puerperal pyrexia.

## 1838. Investigation of choice for diagnosis of PID is ?

a) Laparoscopy

b) Colposcopy

c) Hysteroscopy

d) Ultrasonography

Correct Answer - A
**Ans, A. Laparoscopy**
Laparoscopy is considered the investigation of choice for the diagnosis of pelvic inflammatory disease.

**1839. Which drug is preferred for the treatement of 21 hydroxylase deficient female fetus to prevent genital virilization?**

a) Materal cortisol

b) Maternal dexamethasone

c) Maternal hydrocortisone

d) Maternal methylprednisolone

Correct Answer - B
**Ans, b. Maternal dexamethasone**
Fetus is at risk of CAH maternal dexamethasone therapy can suppress the fetal HPA axis and prevent
genital virilization in affected female fetus.

## 1840. Speilberg criteria is used for ?

a) Ovarian pregnancy

b) Ovarian malignancy

c) Cervical pregnancy

d) Cervical malignancy

Correct Answer - A
**Ans, A. Ovarian pregnancy**

**1841. Main factor responsible for increased perinatal mortality in twin pregnancy is ?**

a) Prematurity

b) IUGR

c) Polyhydramnios

d) Uterine rupture

Correct Answer - A
**Ans, A. Prematurity**

## 1842. Cryptomenorrhoea is a feature of ?

a) Vaginal atresia

b) Turner syndrome

c) Empty sella syndrome

d) Gonadal agenesis

Correct Answer - A
**Ans, A. Vaginal atresia**

**1843. . Which of the following antiepileptic drug is associated with causing congenital heart disease in fetus?**

a) Barbiturates

b) Valproate

c) Carbamazepine

d) Phenytoin

Correct Answer - A
**Ans. A. Barbiturates**

## 1844. Engagement of head in labour means ?

a) Smallest horizontal plane of the presenting part has crossed the pelvic brim

b) Greatest horizontal plane of the presenting part has crossed the pelvic brim

c) Smallest horizontal plane of the presenting part has crossed the pelvic outlet

d) Greatest horizontal plane of the presenting part has crossed the pelvic outlet

Correct Answer - B

**Ans. B. Greatest horizontal plane of the presenting part has crossed the pelvic brim**

When the greatest horizontal plane of the presenting part has passed the plane of pelvic brim the presenting part is said to be engaged.

**1845. Which of the following has maximum diabetogenic potency in pregnancy ?**

a) Estrogen

b) Progesterone

c) Cortisol

d) Prolactin

Correct Answer - C
**Ans, C, Cortisol**

## 1846. Old complete perineal tear is repaired at ?

a) Immediately

b) 3 - 6 months

c) 6 - 9 months

d) 9 - 12 months

Correct Answer - B

**Ans, B. 3 - 6 months**

The definitive surgery for complete perineal tear k repair of the anal sphincter complex (sphinaeroptasty) with restoration of the perineal body (perineoraphy).

For the fresh injuries the best time of repair is within 24 hours afire injury,

For old perineal tears this should preferable be done 3 - 6 months following injury.

## 1847. Amenorrhoea following hyperprolactinoma is caused by ?

a) Inhibition of GnRH pulse secretion

b) Inhibition of adrenal steoridogenesis

c) It causes hypergonadotropic hypogonadism

d) It leads to formation of ovarian cysts

Correct Answer - A
**Ans, A. Inhibition of GnRH pulse secretion**
Prolactin inhibits GnRH pulse secretion and suppresses ganadotropin levels.
Hyperprolactinemiacauses amenorrhea, anovulation and Hypogonadism.

## 1848. Sequence of lochia ?

a) Rubra - Serosa - Alba

b) Serosa - Alba - Rubra

c) Alba - Rubra - Serosa

d) Alba - Serosa - Rubra

Correct Answer - A
**Ans, A, Rubra - Serosa - Alba**
**Lochia**

- It is the vaginal discharge for the first fortnight during peurperium. The discharge originates from the uterine body, cervix and vagina.

**1849. Following is true regarding the management of intrauterine fetal death except ?**

a) In 50% of cases spontaneous expulsion occurs in 2 weeks

b) Fibrinogen levels should be checked weekly

c) Delivery by medical induction is preferred if spontaneous expulsion does not occur

d) Caesarian section has limited place in management of intrauterine fetal death

Correct Answer - A

**Ans, A, In 50% of cases spontaneous expulsion occurs in 2 weeks**

## 1850. Following is true about tamoxifene except ?

a) It is a selective estrogen receptor modulator

b) It is a competitive inhibitor of estrogen at receptor site

c) It decreases risk of venous thromboembolism

d) It can be used for induction of ovulation

Correct Answer - C
**Ans, C, It decreases risk of venous thromboembolism**

## 1851. What is the risk of recurrence of anencephaly in subsequent pregnancy?

a) 1%

b) 2%

c) 3%

d) 4%

Correct Answer - B
**Ans, B. 2%**
The risk of recurrence of anencephaly in subsequent pregnancy is 2%.

## 1852. Another name for mancehster operation for uterine prolapse is ?

a) Fothergill

b) Mercy

c) McDonald

d) Purandare

Correct Answer - A
**Ans, A, Fothergill**
Manchester operation also called Fothergill's operation.

## 1853. Definitive treatment for a case of severe pre eclampsia is -

a) MgS0,

b) Delivery of baby

c) Antihypertensive drugs

d) Rest

Correct Answer - B
**Ans, B. Delivery of baby**
For all types of PIH, irrespective of severity, definitive management is termination of pregnancy"

## 1854. LEEP stands for ?

a) Loop electrosurgical excision procedure

b) Loop electromagnetic excision procedure

c) Loop electrodiagnostic excision procedure

d) Loop electrochemical excision procedure

Correct Answer - A

**Ans, A, Loop electrosurgical excision procedure**

**LEEP**

- Stands for Loop Electrosurgical diagnostic procedure.
- It is also known as large loop excision of the transformation zone (LLETZ).

## 1855. Simultaneous administration of estrogen and progesterone in hormone replacement therapy increases risk of ?

a) Ovarian cancer

b) Breast cancer

c) Cervical cancer

d) Both a and b

Correct Answer - D

**Ans D. Both a and b**

**Risk due to both estrogen and progesterone in HRT:-**

- Breast cancer
- Ovarian cancer
- Risk due to only estrogen in HRT:-
- Endometrial carcinoma

## 1856. Duration of second stage of labor depends upon -

a) Size of fetus

b) Mother's build

c) Parity

d) Lie of fetus

Correct Answer - C
**Ans, C, Parity**
The duration of the normal second stage is usually very much shorter than the normalfirst stage of labour.
As with the first stage the duration of the second stage willmainlydepends on whether it is the first labour or the woman haspreviously given birth to a viable infant i. e. it depends on the parity status ofthe mother,

## 1857. Vasa previa is seen in which type of placenta ?

a) Central

b) Vilamentous

c) Peripheral

d) None of the above

Correct Answer - B
**Ans. B. Vilamentous**
**Vasa previa**

- If a leash of blood vessels happen to traverse through the membranes overlying the internal os, in front of presenting part, the condition is called vasa previa.
- These are the unsupported umbilical vessels in vilamentous placenta.

# 1858.

## Which is not a part of basic essential obstetric care?

a) Blood transfusion

b) Parenteral antibiotics

c) Parenteral oxytocic drugs

d) Parenteral sedatives for eclampsia

Correct Answer - A

**Ans. A. Blood transfusion**

**Basic essential obstetric care services at the health center level should include at least the following:**

- Parenteral antibiotics
- Parenteral oxytocic drugs
- Parenteral sedativesfor eclampsia
- Manual removal of placenta
- Manual removal of retained products

## 1859. Mediolateral episiotomy is preferred because ?

a) Reduces damage to anal sphincter and anal canal

b) Less blood loss

c) Easy to suture

d) Easy technique

Correct Answer - A
**Ans, A. Reduces damage to anal sphincter and anal canal**
Mediolateral episiotomy reduces the risk of damage to anal sphincter and anal canal thought it may slightly increase the bleeding.

## 1860. Monzygotic twin with one healthy baby born at term and one dead mummified fetusis suggestive of ?

a) Fetus acardiacus

b) Fetus papyraceous

c) Hydatidiform mole

d) Vanishing twin

Correct Answer - B

**Ans. B. Fetus papyraceous**

**Fetus Paoyraceous or compressus-**

- Is a state which occurs in case of twins when one of the fetuses dies early.
- The dead fetus is flattened mummifed and compressed between the membranes of livingfetus and uterine waII.
- It may occur in both varieties of twins but is more common in monozygotic twins and is discovered at delivery or earlier by sonography.

## 1861. Sarcoma botryoides all are true except ?

a) Also called embryonalrhabdomyosarcoma

b) Commonly arises from vagina

c) It presents with blood stained watery vaginal discharge

d) It can be treated with VAC regime

Correct Answer - B
**Ans B. Commonly arises from vagina**
Sarcoma botyroides ( Embrvonalrhabdomyosarcoma)
Special type of mixed mesodermal tumour commonly arising from cervix, rarely from vagina &uterus.

## 1862. Following are the indicatons of hysterosalpingography except

a) Fallopian tube patency in infertility

b) Study uterine anamoly

c) Detect uterine synechiae

d) Detect endometriosis

Correct Answer - D

**Ans, D. Detect endometriosis**

**Indications of Hysterosalpingography**

- To study the patency offallopian tubes in infertility and postoperative tuboplasty
- To assess the feasibility of tuboplasty by studying the extent of tubal pathologist.
- To study the uterine anomaly such as septate and cornuate uterus
- To detect uterine synechiae
- To detect uterine polyp
- To study the incompetence of internal OS

## 1863. Most common cause of early abortion -

a) Genetic

b) Maternal

c) Immunologic

d) Anatomic abnormalities

Correct Answer - A
**Ans. A. Genetic**

**1864. Following are the ultrasound doppler parameters used in the diagnosis of intrauterine growth restriction except?**

a) Abdominal circumference

b) Doppler velocimetry

c) Increased diastolic velocity in middle cerebral artery

d) Ponderal index

Correct Answer - A
**Ans, A. Abdominal circumference**

## 1865. What is used to aid identification of areas of dysplasia in colposcopy?

a) 3 - 5% acetic acid

b) Acetocarmine red

c) 1 % formic acid

d) 1 % alcohol

Correct Answer - A
**Ans. A. 3 - 5% acetic acid**
Colposcopy is the mainstay in the diagnosis of cervical dysplasia and precancerous lesions.

## 1866. Which of the following is an absolute indication for caesarian section?

a) Central placenta previa

b) Breech presentation

c) Bad obstetric history

d) Previous caesarian delivery

Correct Answer - A
**Ans, A. Central placenta previa**
**Absolute indications for caesarian section-**

- Central placenta previa
- Contracted pelvis or cephalopelvic disproportion (absolute)
- Pelvic mass causing obstruction (cervical or broad ligament fibroid)

**1867. 34 weeks pregnancy with low lying placenta previa, floating head, Hb - 11 gm%. What should be the further line of management?**

a) Expectant management

b) Induction of labour

c) Caesarian section

d) Blood transfusion

Correct Answer - A
**Ans. A. Expectant management**

## 1868. Risk factors for the ectopic pregnancy are ?

a) IUCD

b) History of infertility

c) Tubal endometriosis

d) All the above

Correct Answer - D
**Ans, D, All the above**

## 1869. Not a risk for ectopic pregnancy ?

a) Use of condom

b) OCP

c) PID

d) Previous ectopic pregnancy

Correct Answer - A
**Ans. A. Use of condom**

## 1870. Following are the causes of oligohydramnios except?

a) IUGR

b) Postmaturity

c) Maternal dehydration

d) Labetolol

Correct Answer - D
**Ans, D. Labetolol**

**1871. Red cell volume is increased by what percentage in pregnancy?**

a) 10 - 20%

b) 20 - 30%

c) 30 - 40%

d) 40 - 50%

Correct Answer - B
**Ans. B. 20 - 30%**

## 1872. How much time after reduced movement fetal heart stops?

a) 1 hr

b) 2 hrs

c) 6 hrs

d) 12 hrs

Correct Answer - D
**Ans, D, 12 hrs**
On an averagefetalheart stops after 12 - 48 hours of diseased fetal movements in intrauterinefetal death.

## 1873. Lileys zone 3 at 35 weeks gestation management is?

a) Follow up

b) Intrauterine infusion

c) Preterm termination of pregnancy

d) Cordocentesis

Correct Answer - C
**Ans, C. Preterm termination of pregnancy**
A chart that uses the spectrographic measurement of amniotic fluid bilirubin levels plotted against gestational age to estimate the severity of fetal hemolysis resultingfrom Rh isoimmunizntion.

## 1874. Upper age limit to diagnose a patient as having primary amenorrhoea is ?

a) 13 years

b) 14 years

c) 15 years

d) 16 years

Correct Answer - D

**Ans. D. 16 years**

A young girl who has not yet menstruated by her 16 years of age has pimary amenonhoea rather than delayed metarche.

Delayed puberty is defined as failure of development of signs of sexual development by the age of 14 years in boy.

In girls delayed puberty is defined as failure of breast budding by I 3 years or absence of menarche by I 5 year or lack of secondary sexual characters by l7 years.

## 1875. Swiss cheese pattern is seen in ?

a) Metropathica hemorrhagica

b) Serous cystadenoma

c) Mucinous cystadenoma

d) Dermoid

Correct Answer - A
**Ans. A. Metropathica hemorrhagica**
Microscopicappearance of endometrium shows: Glandular hyperplasiawith cystic dilation of few glands of variable sizes givingit a swiss cheese appearance.

## 1876. Couvelaire uterus is seen in ?

a) Placenta previa

b) Abruptio placentae

c) Plencenta accrete

d) Velamentous placenta

Correct Answer - B
**Ans. B. Abruptio placentae**
**Couvelaire uterus**

- Also called uteroplacental apoplexy.
- It is seen in association with severe forms of "concealed abruptio placen "

**1877. Condition where there is ingrowth of the endometrium, both glandular and stromal component in myometrium is ?**

a) Adenomyosis

b) Courvelaire uterus

c) Placenta accreta

d) Uterine fibroid

Correct Answer - A

**Ans, A. Adenomyosis**

Adenomyosis is a condition where there is ingrowth of the endometrium, both the glandular and stromal components, directly into the myometrium.

## 1878. In PID due to neiserriea gonorrhea, tubal damage is?

a) Peritubal

b) Endotubal

c) Extratubal

d) Juxtatubal

Correct Answer - B

**Ans. B. Endotubal**

Gonococcal infection involves the mucosa and mainly remains an endoluminal pathology while the other bacterial PID tend to involve deeper tissues and can also involve extratubal tissues. So the most probable answer is endotubal.

## 1879. 20 year old female with primary amenorrhoea with normal presentation of everything except no axillary or pubic hair. What is the diagnosis?

a) Testicular feminization syndrome

b) Kallman syndrome

c) Turners syndrome

d) Klienfelters syndrome

Correct Answer - A

**Ans, A. Testicular feminization syndrome**

**Phenotypically normal females with absence of axillary and pubic hair with primary amenorrhoea have two differential diagnosis:**

- Testicular feminizing syndrome and
- Mullerian agenesis.

## 1880. Transverse lie is caused by all except ?

a) Multiparity

b) Prematurity

c) Anencephaly

d) Placenta previa

Correct Answer - C
**Ans, C. Anencephaly**
**Etiology transverse lie:**

- Multiparity
- Twins
- Contracted pelvis
- Pelvic tumors
- Intrauterine death
- Prematurity
- Hydramnios
- Placentaprevia

Congenital malformation of uterus - arcuate, subseptate

## 1881. Most common breech presentation in primigravida is ?

a) Flexed breech

b) Frank breech

c) Footling presentation

d) Incomplete

Correct Answer - B
**Ans, B. Frank breech**
Breech with extended legs/Frank breech

## 1882. Estimation of fetal hemoglobin is done by ?

a) Gerhard test

b) Kleihauser-Betke Acid Elution Test

c) Grinders test

d) Simpsons test

Correct Answer - B
**Ans. B. Kleihauser-Betke Acid Elution Test**
Modified Keihauser-Betke Acid Elution test: it k used to note the number fetal red cells per 0 low power fields.
If there are 80 fetal erythrocyte in 50 low power fields in maternal peripheralblood films, it presents the transplacental hemorrhage of 4 ml of fetal blood.

## 1883. Most common mode of spread for genital tuberculosis is?

a) Hematogenous

b) Lymphatic

c) Direct

d) Ascending

Correct Answer - A
**Ans. A. Hematogenous**
From any of the primary sites, the pelvic organs involved by hematogenous spread in about 90% of the cases.

**1884. What is the next step in investigating a 45 yrs old female with post coital bleeding and visible cervical mass on speculum examination ?**

a) Dilatation and curettage

b) Conisation

c) Colposcopy

d) Hysteroscopy

Correct Answer - C
**Ans. C. Colposcopy**

## 1885. Treatment of IBI ca cervix ?

a) Wertheim's hysterectomy

b) Radiotherapy

c) Chemotherapy

d) Chemoradiotherapy

Correct Answer - A
**Ans. A. Wertheim's hysterectomy**

## 1886. Management of Stage IIA carcinoma cervix in third trimester of pregnancy is ?

a) Radical hysterectomy, pelvic lymphadenetomy after classic caesarian delivery

b) Periodic cytology and evaluation

c) Cone biopsy

d) Chemotherapy and brachytherapy

Correct Answer - A

**Ans. A. Radical hysterectomy, pelvic lymphadenetomy after classic caesarian delivery**

## 1887. Inhibin is a tumor marker for ?

a) Granulosa cell tumor

b) Dysgerminoma

c) Serous cystadenoma

d) Krukenberg tumor

Correct Answer - A
**Ans. A. Granulosa cell tumor**

## 1888. Call Exner bodies seen in ?

a) Granulosa cell tumors

b) Serous cystadenomas

c) Dysgerminoma

d) Krukenberg tumor

Correct Answer - A
**Ans. A. Granulosa cell tumors**
The formation of Call - Exner bodies is a distinct feature of granulosa cells and can be readilyrecognized in certain types of granulosa cell tumours.

## 1889. Most common germ cell tumor of ovary is ?

a) Dysgerminoma

b) Serous cystadenoma

c) Yolk sac tumor

d) Dermoid cyst

Correct Answer - D
**Ans. D. Dermoid cyst**

**1890. Which of the following is the most common malignant germ cell tumor of ovary?**

a) Yolk sac tumor

b) Dysgerminoma

c) Polyembryoma

d) Choriocarcinoma

Correct Answer - B
**Ans, B. Dysgerminoma**

## 1891. Most common malignant ovarian tumor is ?

a) Serous cystadenocarcinoma

b) Mucinous cysadenocarcinoma

c) Malignant teratoma

d) Sarcoma

Correct Answer - A
**Ans, A. Serous cystadenocarcinoma**

## 1892. Most common ovarian cyst to undergo torsion is ?

a) Dysgerminoma

b) Benign cystic teratoma

c) Ovarian fibroma

d) Brenner's tumor

Correct Answer - B
**Ans, B. Benign cystic teratoma**
Benign cystic teratoma is the most common ovarian neoplasm to undergo torsion.

## 1893. Following the criteria for conservative surgery in patients with ovarian carcinoma except ?

a) FIGO stage II disease

b) Young patient with no or few children

c) Well differentiated serous tumor

d) No infiltration of capsule, lymphatics or mesoovarium

Correct Answer - A

**Ans. A. FIGO stage II disease**

**Requirements for conservative surgery in patients with ovarianCancer are:**

- FIGO stage IA disease
- Well differentiated serous, mucinous, endometroid or clear cell tumor
- Young patient with no or few children
- No other pelvic pathology precluding pregnancy

## 1894. Most common cause of vulval carcinoma is ?

a) HPV infection

b) EBV infection

c) Herpes genitalis infection

d) Syphilis infection

Correct Answer - A
**Ans. A. HPV infection**
HPV infection is a common risk factor for the development of invasive vulval carcinoma.

## 1895. Most common cancer in pregnancy ?

a) Melanoma

b) Breast carcinoma

c) Gastric carcinoma

d) Thyroid carcinoma

Correct Answer - B
**Ans. B. Breast carcinoma**
Breast carcinoma is the most common cancer in pregnancy constituting 46% (1:3000 to 10,000) of the cases followed by hematological malignancies constituting 18 - 25%o of the cases,

## 1896. Most common type of fibroid is ?

a) Intramural

b) Subserosal

c) Cervical

d) Submucosal

Correct Answer - A
**Ans. A. Intramural**

## 1897. Sentinel lymph node biopsy is used to map the lymph node status of which cancers?

a) Breast

b) Melanoma

c) Vulva

d) All the above

Correct Answer - D
**Ans, D. All the above**
Lymphatic mapping and sentinel lymph node biopsy
Technique use to know the local lymph node status in cancers of breast, vulva and melanoma

## 1898. Meigs syndrome is associated with which tumor ?

a) Fibroma

b) Cystadenoma

c) Dysgerminoma

d) Teratoma

Correct Answer - A
**Ans. A. Fibroma**
Meigs syndrome combination offibroma with ascites andhydrothorax, usuaily rightsided.
Seen in 1- 5% patients.

**1899. Carcinoma endometrium with involvement of the vaginal wall is included in which stage ?**

a) IIIA

b) IIIB

c) IIIC

d) IVA

Correct Answer - B
**Ans. B. IIIB**

## 1900. Investigation of choice in endometriosis ?

a) Laproscopy

b) Hysteoscopy

c) CT scan

d) MRI

Correct Answer - A
**Ans. A. Laproscopy**
Laproscopy is considered as gold standard investigation for diagnosis of endometriosis.
It is diagnostic as well as therapeutic,

**1901. Drug commonly used in treatment of endometriosis is?**

a) LH

b) GnRH

c) MPA

d) FSH

Correct Answer - B
**Ans. B. GnRH**

## 1902. First line treatment of infertility in PCOS is ?

a) Clomiphene

b) FSH

c) GnRH

d) Assisted reproductive techniques

Correct Answer - A
**Ans. A. Clomiphene**
Clomiphene citrate is the first line of treatment of infertility in a PCOS woman.

## 1903. Clomiphene citrate is used for ?

a) Anovulation

b) Endometriosis

c) Puberty menorrhagia

d) Hormone replacement therapy

Correct Answer - A
**Ans A. Anovulation**

**1904. Copper IUCD as a contraceptive measure can be used maximum till what time after contact ?**

a) 2 days

b) 3 days

c) 4 days

d) 5 days

Correct Answer - D
**Ans. D. 5 days**
IntroductionofCopperIUDwithinamaximumperiodof5dayscan preventconceptionfollowingaccidentalunprotectedexposure.

## 1905. Absolute contraindication of OC pills are all except?

a) Suspicious vaginal bleeding

b) Cervical cancer

c) Uterine anamoly

d) Old STD

Correct Answer - D
**Ans. D. Old STD**
Current STD is an absolute contraindication (not past STDs).

## 1906. Most common infection in long term IUCD use -

a) Actinomyosis

b) Mucormycosis

c) Aspergillosis

d) Candidiasis

Correct Answer - A
**Ans. A. Actinomyosis**
Actinomycosis is an infection common in patients sing inert IUCDs.

## 1907. Mechanism of action of IUCD is all except ?

a) Inhibit ovulation

b) Induce biochemical changes in endometrium

c) Increase tubal motility

d) Inflammatory respone in endometrium

Correct Answer - A
**Ans, A. Inhibit ovulation**
Act predominantly in the uterine cavity and do not inhibit ovulation.

## 1908. Components of Mala D are all except ?

a) 0.03 mg Ethinyl estradiol

b) 0.15mg desogestrel

c) 0.15 mg levenogestrel

d) Iron tablets

Correct Answer - B
**Ans, B. 0.15mg desogestrel**

## 1909. Not true in complete hydatidiform mole ?

a) Triploid

b) Absence of fetal parts

c) Diffuse trophoblastic hyperplasia

d) Beta HCG > 50,000

Correct Answer - A
**Ans, A. Triploid**
Triploidy and diploidy are seen in partial mole. Complete mole has 46 XX karyotype.

**1910. Risk of scar rupture in lower segment of previous scar present is ?**

a) 05 - 1.5 %

b) 15 - 25 %

c) 2.5 - 3.5 %

d) 3.5 - 4.5 %

Correct Answer - A
**Ans. A. 05 - 1.5 %**

## 1911. Heliotopre sign is seen in ?

a) Dermatomyositis

b) Scleroderma

c) Photodermatitis

d) Vitiligo

Correct Answer - A

Ans. is 'a' i.e., Dermatomyositis

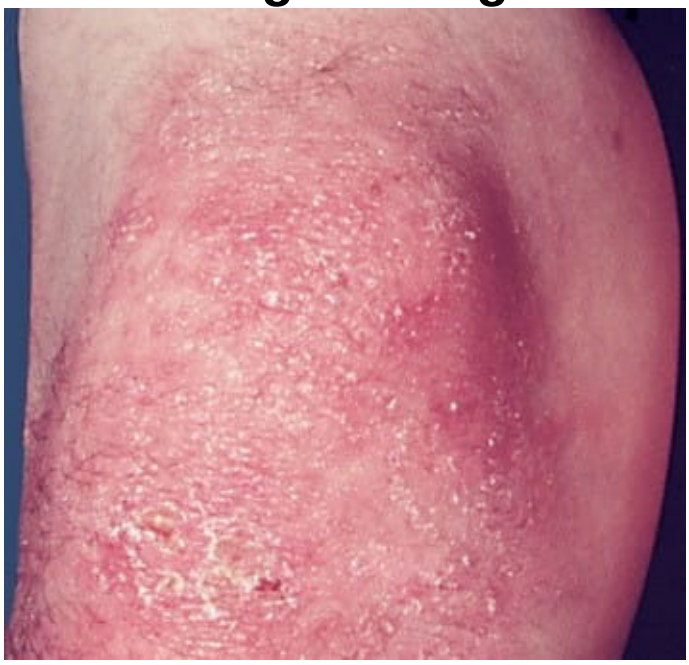
**Cutaneous signs of dermatomyosits**

- Gottron's papules :- lilac or violaceous papules on knuckle, dorsa of hands.
- Gottron's sign :- Violaceous erythema with edema over shoulder, arms, forearms.
- Heliotrope sign :- Violaceous erythema with edema over eyelids, periorbital region.
- Poikiloderma :- Atrophy of skin, hypopigmentaion, dilated blood vessels over trunk.
- Mechanic hand :- Symmetric hyperkeratosis along ulnar aspect of thumb and radial aspect of fingers.
- Shawl Sign :- Violaceous erythema extending from dorsolateral aspect of hands, forearms, and arms to shoulder & neck.
- Calcinosis cutis :- Calcium deposits in skin (in Juvenile variant).
- Miscellaneous signs :- Photosensitivity, vasculitis, panniculitis, Nail-fold telangiectasia.

**Extracutaneous involvement**

1. Proximal myositis
2. Cardiomyopathy
3. Raynaud's phenomenon
4. Arthralgia

## 1912. Gottron signs is sign in?



a) dermatomyositis

b) herpes infection

c) Bacterial infection

d) All of the above.

Correct Answer - A
**Dermatomyositis** (DM) is a connective-tissue disease related to polymyositis (PM) that is characterized by inflammation of the muscles and the skin. While DM most frequently affects the skin and muscles, it is a systemic disorder that may also affect the joints, the esophagus, the lungs, and the heart.

**1913. Patient presents with discharge per urethrum and microscopy shows presence of intracytoplasmic gram negative cocci; what is the most probable diagnosis ?**

a) Gonorrhea

b) Donovanosis

c) Bacterial vaginosis

d) Syphilis

Correct Answer - A

Ans. is 'a' i.e., Gonorrhea

- Presence of pus discharge per urethrum in males with presence of intracytoplasmic gram negative cocci are pointers to the presence of N. gonorrhea infection.

**GONOCOCCAL INFECTION**

- N.Gonorrhoeae is an intracytoplasmic gram negative coccus.
- N. gonorrhoeae is exclusively a human pathogen although chimpanzees have been infected artificially.
- It is never found as a normal commensal although a proportion of those infected, particularly women, may remain asymptomatic.
- Acute urethritis is most common manifestation. Purulent discharge per urethra is the most common manifestation.
- The process may extend, along the urethra, to prostate, seminal vesicle, epididymis.

## 1914. Christmas tree appearance in skin is seen in ?

a) Pityriasis rosea

b) Pityriasisrubrapilaris

c) Psoriasis

d) Vitiligo

Correct Answer - A
Ans. is 'a' i.e., Pityriasis rosea
**<u>Pityriasis rosacea</u>**

- P. rosea is a common *scaly disorder,* occuring usually in *children and young adults (10-35 years).*
- Characterized by round/oval pink brown patches with a superficial, *centrifugal* scale, distributed over *trunk* in a *Christmas tree pattern.*
- The disease is thought to be viral *disease,* is *self limiting,* and subsides in 6-12 weeks.
- The exact etiology is not known, but it is considered to be a viral disease; *Human Herpes virus 6 (HHV 6) and* Human Herpes virus 7 (HHV 7) may play a role**.**

**Clinical manifestations of P. rosea**

- The disease starts with an *upper respiratory prodrome or a mild flu.*
- After 1-2 weeks, Annular erythmatous plaque appears on trunk that is referred to as mother patch or herald patch.
- Over the next 1-2 weeks, fresh patch appear all over the trunk, in a Christmas tree configuration or Fir tree Configration.
- The lesions are *pinkish in white skin,* hence the name rosea.
- However, on the dark Indian skin the lesions are skin coloured or brown.
- The most characteristic clue for the diagnosis is the presence of a

fine scale at the edge of the lesion referrred to as centrifugal scale or collarette scales or cigarette paper scales.
**Lesions subside with hyperpigmentation.**

- Trunk is involved predominantly, Sometimes (in 20% of patients) lesions occur predominantly on extremities and neck (inverse pattern).

## 1915. Pomphylox affects ?

a) Palms & soles

b) Groin

c) Scalp

d) Trunk

Correct Answer - A
Ans is 'a' i.e., Palms & soles
**POMPHOLYX**

- An attack of pompholyx is characterized by the sudden onset of crops of clear vesicles, which appear 'sago-like'.
- Itching may be severe, preceding the eruption of vesicles.
- The attack subsides spontaneously in 2-3 weeks .
- In mild cases, only the sides of the fingers may be affected, but in a typical case the vesicles develop symmetrically on the palms and/or soles

## 1916. Pseudobubo seen in:

a) Chancroid

b) Syphilis

c) Lymphogranuloma inguinale

d) Lymphogranuloma venerum

Correct Answer - C
Ans. is. 'c' i. e., Lymphogranuloma inguinale

## 1917. Erythrasma is caused by ?

a) Comybacterium

b) Staphylococcus

c) Streptococcus

d) Herpes Virus

Correct Answer - A
Ans. is 'a' i.e., Cornybacterium

- Erythrasma is a skin disease that causes brown, scaly skin patches. It is caused by the Gram-positivebacterium Corynebacteriumminutissimum. It is prevalent among diabetics and the obese, and in warm climates; it is worsened by wearing occlusive clothing.

## 1918. HPV causes ?

a) Condylomalata

b) Condyloma acuminata

c) Bubo

d) Chancre

Correct Answer - B
Ans. is 'b' i.e., Condyloma acuminata

## 1919. Drug of choice for genital warts is ?

a) Acyclovir

b) Podophyllin

c) Minocyclin

d) Interferon alpha

Correct Answer - B
Ans. is 'b' i.e., Podophyllin

## 1920. Depigmenting agent of choice in in treatment of dermatological disorders is

a) Hydroquinone

b) Zinc

c) Kojic acid

d) Azelaic acid

Correct Answer - A
Ans. is 'a' i.e., Hydroquinone
**Skin depigmenting agents in clinical use are**

- Hydroquinone - most effective and widely used
- Kojic acid
- Kojicdipalmitate
- Azelaic acid

## 1921. Nail pitting is seen with ?

a) Paronychia

b) Ectodermal dysplasia

c) Alopecia areate

d) All the above

Correct Answer - D
Ans. is'd' i.e., All the above

## 1922. Vitiligo is associated with the following except

a) Addison's disease

b) Men syndrome

c) Pernicious anemia

d) Crohns disease

Correct Answer - D
Ans. is 'd' i.e., Crohns disease
**Vitiligo is associated with the following autoimmune diseases :-**

- Alopecia areata
- Diabetes mellitus
- Hyperthyroidism
- Hypothyroidism
- Pernicious anemia
- Addison disease
- Multiple endocrinopathy syndrome

## 1923. Treatment of nodulocystic acne is

a) Erythromycin

b) Tertacycline

c) Isoretinonine (Retinoic acid)

d) Steroids

Correct Answer - C
C i.e. Isoretinonine

## 1924. True about erythema toxicumneonatorum is ?

a) It is present in 3 - 5 % of the newborns

b) It is mostly present at birth

c) It is called the flea bitten rash of newborn

d) Topical antibiotics is the treatment of choice

Correct Answer - C

Ans. is 'c' i.e., It is called the flea bitten rash of newborn

**Erythema ToxicumNeonatorum**

- It is the harmless, erythematous, short lived eruptions of the newborn.
- It is present in 30 - 50% of the newborns
- It is considered a part of normal transition from the watery womb to the dry external environment.
- It appears most often in the first 2 days of life and is rarely present at birth
- It consists of widespread erythematous macules most present in the trunk and the proximal parts of the extremities.
- Hurwitz called it the flea bitten rash of new born.
- No active therapy is needed for the treatment.

## 1925. What is the the most probable diagnosis of a child who presents with white umbilicated lesions on face?

a) Molluscumcontagiosum

b) Herpes simplex infection

c) Erythema toxicumneonatorum

d) Human pappiloma virus infection

Correct Answer - A

Ans. is 'a' i.e., Molluscumcontagiosum

- Pearly white umblicated papule on face in children is most commonly seen in Molluscumcontagiosum.

**Molluscum contagiosum**

- It is a common viral infection in children. It is caused by pox virus, i.e., Molluscum contagiosum virus. It is characterized by *multiple* pearly white, *dome-shaped papules which are umbilicated centrally.* On using a hand lens, many of the papules has a *mosaic appearance.* Epidermal cells contain *eosinophilic intracytoplasmic inclusion bodies (Molluscum or Henderso-Paterson bodies). Autoinoculation* can give rise to lesions arranged linearly along line of trauma ----> *pseudoismorphic (pseudokoebner's) phenomenon.* M.C. may involve any part of the body *In children face is involved most commonly.* Anogenital molluscum contagiosum is a STD.

**Treatement**

- Curretage, electrocautery, cryotherapy are simple and effective methods. Imiquimed, a recently introduced immunostimulant, is helpful in patients with multiple lesions and in small children.

## 1926. Haascheiben cells in epidermis are responsible for?

a) Touch

b) Temperature

c) Pressure

d) Proprioception

Correct Answer - A
Ans. is 'a' i.e., Touch

## 1927. Apple jelly noddule is seen in ?

a) Lupus vulgaris

b) Cutaneous anaphylaxus

c) Erythroderma

d) Erysepals

Correct Answer - A
Ans. is 'a' i.e., Lupus vulgaris
**<u>Lupus vulgaris</u>**

- Lupus vulgaris is a chronic and progressive form of cutaneous tuberculosis that occurs in tuberculin sensitive patients. It is the most common type of cutaneous tuberculosis and has most variable presentation. Seen in children and young adults, though no age is exempted. Occurs on *exposed area like face (nose, eyelid, pinna);* and sometimes on buttock, *trunk.*
- Lesions are usually *solitary* and characterized by : -

1. Reddish brown (erythematous).
2. Annular in shape.
3. Indurated.
4. Slowly increases in size (gradually progressive).
5. Healing with tissue paper like scarring at centre (most common) or edge.
6. Peripheral crusting.
7. Blanching with glass slide (diascopy) will reveal grey green foci —> Apple jelly nodules.
8. Match-stick test positive —> Apple jelly nodule has no resistance to pressure by a sharp match-stick.

- Reappearance of new nodules within previously atrophic or scarred lesions is characteristic. Cartilage (Ear, nose) in the affected area is

progressively destroyed (Lupus vorax); bone is usually spared. Buccal, nasal and conjuctival mucosa may be involved primarily or by extension. Treatment is antitubercular drugs (ATT).

## 1928. Flaccid bullae with mucosal involvement and intraepidermal acantholysis are characteristic of?

a) Pemphygus vulgaris

b) Pemphigus foliaceous

c) Psoriasis

d) Vitiligo

Correct Answer - A
Ans. is 'a' i.e., Pemphygus vulgaris
**Among the given options, two are vesicullabullous disorders :-**
1. Pemphigus vulgaris
2. Pemphigus foliaceous

- Both of these cause flaccid bullae with intraepidermal blisters.
- but, mucosal involvement is common in pemphigus vulgaris (not in P foliaceous).

## 1929. Ig A deposition in dermoepidermal junction skin seen in ?

a) Dermatitis herpetiformis

b) Bullous pemphigoid

c) Linear IgA disease

d) Epidermolysis bullosa

Correct Answer - C
Ans. is 'c' i.e., Linear IgA disease

## 1930. Not a feature of scabies is ?

a) Serpentine burrow

b) Severe itching

c) Web space affection

d) Genitalia are not affected

Correct Answer - D
Ans. is 'd' i.e., Genitalia are not affected

## 1931. True about the lesions of lichen planus ?

a) Polygonal violaceous paple

b) Affect skin and mucous membranes

c) Are pruritic

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above

## 1932. Antigen defect in Pemphigus Vulgaris -

a) Desmoglein-1

b) Desmoglein-3

c) Desmocollin-3

d) Desmocollin-2

Correct Answer - B
Ans. is 'b' i.e., Desmoglein-3

## 1933. Color of tuberous sclerosis lesions on wood lamp examination ?

a) Bright green

b) Milky white

c) Golden yellow

d) Blue white

Correct Answer - D
Ans. is 'd'  i.e., Blue white

**Wood lamp**

- This is a source of ultraviolet light (320-400nm) from which virtually all visible rays have been excluded by a Wood's (nickel oxide) filter.
- Primarily emits 360nm.
- UV light, when absorbed by certain substances, fluorescences in dark and color produced, is useful in diagnosis of the certain conditions

| Condition | Fluorescence colour |
|---|---|
| Tinea capitis | Bright yellow green |
| Erythrasma | Coral red or pink |
| Vitiligo | Milky white |
| Albinism | Blue white |
| Leprosy | Blue white |
| Tuberous sclerosis | Blue white |
| Pseudomonas infection | Greenish white |
| Porphyria | Pink/orange |
| Tinea vesicolor | Golden yellow |

## 1934. Alopecia areata is a/ an ?

a) Autoimmune disorder

b) Allergic disorder

c) Anaphylactic disorder

d) Bacterial infection

Correct Answer - A
Ans. is 'a' i.e., Autoimmune disorder

## 1935. Whitfield's ointment consists of ?

a) 3% salicylic acid + 6% benzoic acid

b) 3% benzoic acid + 6% salicylic acid

c) 2% salicylic acid + 4% benzoic acid

d) 2% benzoic acid + 4% salicylic acid

Correct Answer - A

Ans. is 'a' i.e., 3% salicylic acid + 6% benzoic acid

**Whitfield's Ointment**

- Whitfield's ointment is salicylic acid and benzoic acid in a suitable base, such as lanolin or vaseline.
- The original ointment contains 3% salicylic acid and 6% benzoic acid, but other ratios are also used.
- It is used for the treatment of fungal infections, such as athlete's foot. Its effectiveness is unclear.
- It can have a slight burning effect that goes away after a few minutes.
- It is named for Arthur Whitfield (1868-1947), a British dermatologist

## 1936. Sphagetti and meat ball appearance is seen in ?

a) Pityriasis rosacae

b) Tinea capitis

c) Tinea carporis

d) Tinea versicolor

Correct Answer - D
Ans. is 'd' i.e., Tinea versicolo
**Pitvriasis versicolor (tinea versicolor)**

- Tinea versicolor is a misnomer as it is not caused by a dermatophyte; it is caused by a nondermatophytic fungus called Pityrosporum ovale (malasezia furfur). Usually affects *young adults.*

**Clinical features**

- There are multiple scaly hypopigmented (more common) or hyperpigmented macules. Scaling is fufuraciousor rice powder like. Macules start around the hair follicles and they merge with each other to form large areas. Affects trunk and shoulders (mainly chest and back). There may be loosening of scales with finger nails-coupled onle or stroke of nail. Lesions are recurrent in nature.

**Diagnosis**

1. Examination of scales in 10% KOH shows short hyphae and round spores *(sphagetti and meat ball appearance).* Wood's lamp shows apple green fluorescence(blue-green fluorescnce).
2. Skin surface biopsy - a cyanoacrylate adhesive is used to separate the layer of stratum corneum on glass slide and then stained with PAS reagent.

**Treatment**

1. Systemic agents :- systemic azoles provide convenient therapeutic

option. Drugs used are ketokonazole, fluconazole or iatroconazole

2. Topical antifungals used are ?

- Azoles clotrimazole, econazole, miconazole, ketoconazole
- Others :- selenium sulphide, sodium thiosulphate, whitefield's ointment (3% salicylic acid + 6% benzoic acid).

**1937. Which of the following can cause both cicatricial as well as noncicatrical alopecia ?**

a) Alopecia areata

b) Telogen effluvium

c) SLE

d) Hypothyroidism

Correct Answer - C
Ans. is 'c' i.e., SLE

## 1938. Fox Fordyce Disease effects:

a) Sebaceous glands

b) Eccrine Glands

c) Apocrine glands

d) Any gland

Correct Answer - C
Apocrine glands

## 1939. Miliaria arises from obstruction of ?

a) Eccrine sweat glands

b) Apocrine sweat glands

c) Sebaceous glands

d) Ectopic sebaceous glands

Correct Answer - A
Ans. is 'a' i.e., Eccrine sweat glands
**Milliria**

- Occur as a result of either obliteration or disruption of the eccrine sweat duct.

**Three forms :-**

1. Miliaria crystallina- Clear, thin-walled vesicles, 1-2 mm in diameter, without an inflammatory areola, are usually symptomless and develop in crops, mainly on the trunk.
2. Miliaria rubra- erythematous papules especially in areas of friction with clothing, and in flexures, produce intense pricking sensation.
3. Miliaria profunda- This nearly always follows repeated attacks of miliaria rubra, o Complications :- Secondary infection and disturbance of heat regulation

## 1940. Infectious cause of erythema multiforme in given image is -

a) Staphylococcus

b) TB

c) HSV

d) EBV

Correct Answer - C

**Answer-C-Herpes simplex virus**

- Herpes simplex is the primary cause of erythema multiforme, and the virus is present in 70 percent of recurrent erythema multiforme cases. Both types of herpes simplex virus (HSV) can cause the condition, but HSV-1, which also causes cold sores, is responsible for most cases.

**Causes of Erythema multiforme**

- Idiopathic → Most common cause
- Viral → HSV (most important) HBV, Mumps, Adenovirus
- Bacteria → Streptococci, tuberculosis
- Fungal → Coccidioidomycosis, Histoplasmosis.
- Drugs →Antibiotics (Sulphonamide), Phenytoin, NSAIDS.
- Autoimmune disease → SLE, thyroiditis, RA

- Others → Sarcoidosis, Pregnancy, Malignancy**.**

## 1941. Patchy hair loss with velvety skin points to the diagnosis of

a) Alopecia aereata

b) Trichotelomania

c) Hyperthyroidism

d) Adenoma sebacicum

Correct Answer - C
Ans. is 'c' i.e., Hyperthyroidism

- Hair loss in combination with velvety skin is seen in patients with excess of thyroid hormone production; thus the most probable answer is hyperthyroidism

## 1942. Black piedra is caused by ?

a) Piedraia hortae

b) Trichosporon asahi

c) Trichosporon ovoides

d) Trichosporon inkin

Correct Answer - A
Ans. is 'a' i.e., Piedraia hortae

- Piedra is an asymptomatic superficial fungal infection of the hair shaft also known as trichomycosis nodu- laris. Black piedra is caused by Piedraia hortae, whereas white piedra is caused by pathogenic species of the Trichosporon genus, namely Trichosporon asahii, Trichosporon ovoides, Trichosporon inkin, Trichosporon mucoides, Trichosporon asteroides, and Trichosporon cutaneum.

## 1943. Keratodermic sandles is a feature of ?

a) Pityriasis rosacea

b) Lichen planus

c) Psoriasis

d) Pityriasis rubra pilaris

Correct Answer - D

Ans. is `d' i.e., Pityriasis rubra pilaris

**Pityriasis rubra pilaris**

- It is a chronic papulosquamous disorder of unknown etiology characterized by : ?

1. Scaling (Pityriasis means scaling Skin disorder)
2. Erythmatous plaque (Rubra)
3. Follicular papules (Pilaris)

- Hence the name pityriasis rubra pilaris.
- Two peaks of age are seen : ?

1. 5-10 years in juvenile type
2. 40 - 60 years in adult type

**Clinical presentation**

- Characteristic lesions are erythmatous (orange to pink), follicular, scaly plaques. A characteristic feature of plaques is the presence of distinct islands of normal skin.

**Sites of predilection**

- Trunk —> Lesions on the trunk evolve in craniocaudal (Cephalo caudal) direction. Typically, follicular lesions are seen on the dorsum of hands on knuckles --> Nutmeg papules. Associated features

1. Diffuse erythema and scaling of face.
2. Orangish thickening of palms and soles (Keratodermic sandals).
3. Nails —> Distal yellow brown discoloration and nail plate thickening.

**Complications Erythroderma**

**Treatment**

- Localized lesions —> Topical corticosteroids + Keratolytics (Salicylic acid, urea)
- Erythroderma -4 Vitamin A, Acitretin (Retinoids), oral methotrexate

## 1944. In scabies which skin layer is affected?

a) Stratum corneum

b) Stratum basale

c) Stratum lucidum

d) Stratum germinatum

Correct Answer - A
Ans. is 'a' i.e., Stratum corneum

- After copulation, the male mite dies and the female mite burrows into the superficial skin layer (stratum cornuem) at the rate of *2 mm/day.*
- Female mite lays eggs which hatch into larva, which moulds and mature into adult mites.
- The mite then burrows into stratum corneum.
- These burrow is visible clinically as an *irregular gray-brown line.*
- Burrow is a pathognomic sign for scabies.

## 1945. Groove sign of greenbalt is seen in ?

a) LGV

b) Donovanosis

c) Chancroid

d) Genital Herpes

Correct Answer - A
Ans. is 'a' i.e., LGV

- Groove sign of Greenblatt' is pathognomonic of LGV when inguinal lymph nodes are enlarged, they are separated by Poupart's ligment, producing a groove.

## 1946. Mutation in which collagen is present in epidermolysis bullosa ?

a) II

b) IV

c) V

d) VII

Correct Answer - D
Ans. is 'd' i.e., VII
**Molecular pathology of E**B

- Normal basement membrane is between epidermal basal layer and dermis. This basement membrane (basal lamina) is attached to basal cells hemidesmosomes with the help of keratin containing intermediate filaments and is attached to dermis (dermal papillary layer) with the help of type VII collegen containing fibrils. Any defect in this anchoring complex leads to separation of skin; the site of separation depends on the type of defect

1. EB simplex —> Mutation in gene coding for keratin 5 & 14 (major keratin of BMZ) and separation will be epidermal.
2. EB junctional —> Mutation in Lantinin a-3 (LAM a-3), LAM [I-3, LAM 7-2 genes. As laminin is part of basement membrane the separation will be at dermo-epidermal junction (DEJ).
3. EB dystrophicans —> Mutation in collagen VII-Al gene. As collagen VII containing fibrils join BM to dermal papilla, separation will be in the dermis.

- Any of the above defect results in defective cohesiveness which leads to vulnerability to trauma and blisters formation. As the disease is inherited, Family history may be positive.

## 1947. Dermatophyes affect ?

a) Keratin

b) Dermis of skin

c) Stratum basal

d) Stratum basal

Correct Answer - A

Ans. is 'a' i.e., Keratin

- Dermatophytes are keratinophillic fungi, living only on the superficial dead keratin. That is why they infect skin, hair and nail. In skin they infect most superficial layer of the epidermis i.e. stratum corneum. They do not penetrate living tissues. Dermatophytes cause a variety of clinical conditions, collectively known as dermatophytosis, tinea or ringworm. Dermatophytes have been classified into 3 genera :- trichophyton, microsporum, epidermophyton.

1. Trichophyton affects;- skin, hair, nails
2. Microsporum affects ;- skin, hair (nails are not affected)
3. Epidermophyton affects:- skin, nails (hair are not affected)

- Deep fungal infections (eg:- maycetoma, chromoblastomycosis, pheohyphomycosis, sporotrichosis, lobomycosis, rhinosporidiosis) involve subcutaneous tissue.
- Dermatophytosis is itchy and scaly

## 1948. Onychomycosis is most commonly caused by ?

a) a) Trichophyton rubrum

b) Trichophyton mentagrophytes

c) Epidermatophyton floccosum

d) a) Candida

Correct Answer - A
Ans. is 'a' i.e., Trichophyton rubrum
**<u>Tinea Unguium (Onychomycosis)</u>**

- Tinea unguium is dermatophytic infection of fingers and toe nails. Most common causative species is *T-rubrum. Toe nails* are more commonly involved. T. Unguium may be of two types : **?**

.. Distal subungal onychomycosis : - This is *most common type of fungal infection of nail (90%).* It starts at the distal edge of the nail plate and slowly grows inwards to involve entire nail plate.

2. Proximal Subungal onychomycosis : - Starts at the base of nail and slowly involves the entire nail plate.

## 1949. Gas used in rapid airbag inflation

a) Sodium azide

b) Nitrocellulose

c) Mercuric nitrate

d) Potassium nitrate

Correct Answer - A
Ans. is 'a' i.e., Sodium azide
**Chemistry of air bags**

- The inclusion of air bags in the modern automobiles has led to decrease in the automobile injures.
- The term air bag is a misnomer as air is not involved in the inflation process.
- Rather an air bag inflates rapidly (in about 30ms) due to explosive production of N2 gas. Sodium azide is used which is rapidly decomposed to Nitrogen gas.

**1950. What is the next step in management in managing a child with difficult intubation with 4 failed attempts at intubation?**

a) Use LMA

b) Abandon the procedure

c) Try ET tube intibation again

d) Cricothyrotomy

Correct Answer - A
Ans. is 'a' i.e., Use LMA

## 1951. Current mode of analgesia best for intrapartum pain relief?

a) Epidural analgesia

b) Spinal anaesthesia

c) Inhalational

d) Local analgesia

Correct Answer - A
Ans. is 'a' i.e., Epidural Analgesia

- Continuous lumbar epidural analgesia is the procedure of choice for pain relief during normal labour and vaginal delivery (Intrapartum pain).

## 1952. Elderly patient with fracture right hip anesthetic of choice

a) Spinal/ epidural

b) General

c) Local infiltration

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Spinal/epidural

## 1953. Which of the following inhalational agent sensitizes myocardium to catecholamine

a) Sevoflurane

b) Isoflurane

c) Ether

d) Halothane

Correct Answer - D
Ans. is 'd' i.e., Halothane

- Some inhalational agent sensitize the heart to adrenaline —> Arrhythmias can occur —> Therefore these agents are contraindicated in Pheochromocytoma and along with adrenaline.
- Halothane has maximum propensity .
- Other agents sensitizing the heart to adrenaline are Trilene, Cyclopropane, Chloroform, Enflurane

**1954. Which of the following is not primarily used to anesthetize mucosa ?**

a) Benzocaine

b) Lidocaine

c) Bupivacain

d) Tetracaine

Correct Answer - C
Ans. is 'c' i.e., Bupivacaine

## 1955. Post spinal headache lasts for ?

a) 10 min

b) I hrs

c) 10 days

d) 1 week

Correct Answer - C
Ans. is 'c' i.e., 10 days

- Post dural puncture headache is due to CSF leak. Typical location is bifrontal or occipital.
- Headache gets worsen on sitting or upright posture and is relieved by lying down position and abdominal pressure —> The hallmark of postdural puncture headache i.e., association with body position.
- The onset of headache is usually 12-72 hours following the procedure, however, it may be seen almost immediately. In most cases it lasts for 7-10 days.
- PDPH is believed to result from leakage of CSF from a dural defect and decreased ICT. Loss of CSF at a rate faster that it can be produced causes traction on structure supporting the brain, particularly dura and tentorium. Traction on cranial nerve (particularly 6th nerve) produces diplopia.
- Factors that increase the incidence of PDPH are young age, female sex, Pregnancy, large bore needle and multiple punctures.
- Use of small bore needle can prevent PDPH .
- Intially conservative treatment is given which includes analgesics (NSAIDs), oral or i.v., fluids, Sumatriptan, cosyntropin, caffeine and recumbent position.
- If conservative treatment fails, epidural blood patch can be used. It involves injecting 15-20 ml of autologus blood into the epidural

space which stop leakage of CSF by coagulation and mass effect

## 1956. Onset of post spinal headache is usually at hours after spinal anesthesia

a) 0 - 6

b) 6-12

c) 12 - 72

d) 72 - 96

Correct Answer - C
Ans. is 'c' i.e., 12 - 72

## 1957. True about post dural headache is all except:?

a) Orienting beveled edge needle parallel to long axis prevents it

b) Thin bore needle prevents it

c) It is more common in males

d) Timing of ambulation has no effect over its incidence

Correct Answer - C

Ans. is `c' i.e., It is more common in males

**FACTORS THAT INCREASE THE INCIDENCE OF HEADACHE AFTER SPINAL PUNCTURE**

- Age : Younger, more frequent.
- Sex : Females > males
- Needle size : Larger > smaller
- Needle bevel : Less when the needle bevel is placed in the long axis of the neuraxis
- Pregnancy : More when pregnant
- Dural punctures : More with multiple punctures

**FACTORS THAT DO NOT INCREASE THE INCIDENCE OF HEADACHE AFTER SPINAL PUNCTURE**

- Insertion and use of catheters for continuous spinal anaesthesia
- Timing of ambulation

**About option a**

- Orienting a needle bevel parallel with the axis of the spine, such that the longitudinal fibres of the dura would more likely be separated than cut, results in a lower incidence of postspinal puncture headache.

## 1958. Local anaesthetic causing methemoglobinuria is?

a) Dibucaine

b) Chlorprocaine

c) Procaine

d) Benzocaine

Correct Answer - D
Ans. is 'd' i.e., Benzocaine
**Important facts about LAs**

- Chlorprocaine is the shortest acting LA.
- Dibucaine is the longest acting, most potent and most toxic LA.
- Procaine & chlorprocaine are least potent LAs.
- Bupivacaine is the most cardiotoxic LA (Ropivacaine is a newer bupivacaine congener with less cardiotoxicity).
- Levobupivacaine (The S (-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure.
- Prilocaine and Benzocaine can cause Methaemoglobinemia
- Lignocaine is the most commonly used LA.
- Bupivacaine has the highest local tissue irritancy.
- Chlorprocaine is contraindicated in spinal anaesthesia as it can cause paraplegia due to presence of neurotoxic preservative sodium metabisulphite.
- Procaine is the LA of choice in malignant hyperthermia

## 1959. Percentage of lidocaine in Eutectic mixture -

a) 1%

b) 2.5%

c) 5%

d) 10%

Correct Answer - B
Ans. is 'b' i.e., 2-5%
**Eutectic mixture of local Anaesthetics**

- This is unique topical preparation which can anaesthetise intact skin.
- It is a mixture of 2.5% lidocaine and 2.5 prilocaine.
- It acts slowly and the cream must held in contact with skin for at least 1 hour.
- EMLA is used : to make venepuncture painless especially in children, and for procedure like skin grafting & circumcision.
- As systemic absorption of prilocaine can cause methemoglobinemia, EMLA should not be used on mucocutaneous membrane or in very small child.

## 1960. Percentage of tetracaine used in eye surgery?

a) 0.5%

b) 1%

c) 2%

d) 4%

Correct Answer - A
Ans. is 'a' i.e., 0.5%

- Cataract surgery can be performed using topical anaesthesia alone. Tetracaine 0.5% and Lidocaine 4% can be used.
- Advantages of this method is that it avoids the potential complications with retorbulbar and peribulbar injections. Dsadvantages include the potential for eye  movement during surgery, increased patient anxiety, and discomfort from the microscope light

## 1961. In epidural anaesthesia drug is injected ?

a) Outside the dura

b) Inside the duramater

c) Inside arachnoidmater

d) Inside piamater

Correct Answer - A
Ans. is 'a' i.e., Outside the dura

## 1962. Local anaesthetic with prolonged action ?

a) Procaine

b) Cocaine

c) Lidocaine

d) Dibucaine

Correct Answer - D
Ans. is 'd' i.e., Dibuca

- Dibucaine is the longest acting local anaesthetic
- Chlorprocaine is the shortest acting local anaesthetic
- Decreasing order of duration : - Dibucaine > Bupivacine = Tetracaine = Ropivacaine = Etidocaine > Prilocaine = Lignocaine = Mepivacaine = Cocaine > Procaine > Chlorprocaine .

## 1963. Drug used to prolong action of LA in Hypertensive pts?

a) Clonidine

b) Felypressin

c) Dexmeditomidate

d) Noradrenalin

Correct Answer - B
Ans. is 'b'.e., Felypressin

## 1964. Supraclavicular block is used for surgery of ?

a) Shoulder

b) Forearm

c) Arm

d) All

Correct Answer - D
**Ans. is D.`(A) Shoulder (B) Forearm (C) Arm**

## 1965. Most common complication of coeliac plexus block ?

a) Hypotension

b) Parasthesias

c) Diarrhea

d) Pneumothorax

Correct Answer - A
Ans. is 'a' i.e., Hypotension
**Celiac plexus block**

- The celiac plexus is situated retroperitoneally in the upper abdomen. It is at the level of $T_{12}$ and L, vertebrae anterior to the crura of the diaphragm. It contains visceral afferent and efferent fibers divided from $T_5$ to $T_1$, by means of greater, lesser and least splanchnic nerves. Celiac plexus innervates most of the abdominal viscera, therefore this procedure blocks the nerves which come from the pancreas, liver, gall bladder, stomach, intestine, spleen, kidney and adrenal glands.
- A celiac plexus block can be combined with an intercostal block to provide anesthesia for intra-abdominal surgery.
- Because celiac plexus block results in blockade of the autonomic nervous system, this block may help to reduce stress and endocrine responses to surgery. For the same reason, the most common complication of celiac plexus block is postural hypotenstion because of blockade of lumbar sympathetic chain leading to upper abdominal vessel dilation and venous pooling.
- Celiac plexus block can be done by following three approaches : - Retrocrural (classic) approach, anterocrural approach and

splanchnic nerve block.

- Celiac plexus block is given to treat intractable pain in chronic pancreatitis, gastric & pancreatic malignancies.
- It can be combined with an intercostal block to provide anesthesia for intra-abdomival surgery.
- Postural hypotension is the Most common complication of classic retrocrural and splanchnic nerve block,
- Where as most common complication of Anterocrural approach is transient diarrhoea

## 1966. False about local anesthetics

a) Prilocaine is less toxic than lignocaine

b) Lignocaine is used as an antiarrhythmic

c) Mixture of ligno + prilocaine is known as eutectic

d) Lidocaine is shorter acting than bupivacaine

Correct Answer - A
Ans. is 'a' i.e., Prilocaine is less toxic than lignocaine

## 1967. Risk factors associated with health care associated pneumonia (HCAP)-

a) Acute care hospitalization for at least 2 days in the preceding 90 days

b) Home infusion therapy

c) Immunosuppressive disease or immunosuppressive therapy

d) Antibiotic therapy in the preceding 90 days

e) Hospitalization for > 48 h

Correct Answer - A:B:C:D:E

**Answer- (A) Acute care hospitalization for at least 2 days in the preceding 90 days (B) Home infusion therapy (C) Immunosuppressive disease or immunosuppressive therapy (D) Antibiotic therapy in the preceding 90 days (E) Hospitalization for > 48 h**

- Acute care hospitalization for at least 2 days in the preceding 90 days
- Residence in a nursing home or extended care facility
- Home infusion therapy, including chemotherapy, within the past 30 days
- Long-term dialysis within the past 30 days
- Home wound care
- Family member with an infection involving a multiple drug resistant pathogen
- Immunosuppressive disease or immunosuppressive therapy

## 1968. Pudendal Nerve Block Involve

a) LiL2L3

b) L2L3L4

c) SiS2S3

d) S2S3S4

Correct Answer - D
D i.e. **S2 S3 S4**

## 1969. In Bier's block aesthetic agent given by which route?

a) Intravenous

b) Peribulbar region

c) Retrobulbar area

d) Dermal

Correct Answer - A
Ans. is 'a' i.e., Intravenous

- Intravenous regional anaesthesia (IVRA) is used most often for surgery of the forearm and hand, but can also be used for distal leg and foot.
- First IV cannula is inserted usually in the dorsum of hand.
- Then tourniquet cuff is applied to proximal arm.
- Limb is elevated and exsanguinated with the help of an elastic bandage (Esmarch).
- Now tourniquet cuff is inflated above systolic pressure (so that no blood can enter in that limb and the limb remains exsanguinated).
- Now the local anaesthetic solution is slowly injected into cannula.
- The veins are filled with only local anaesthetic as there is no blood —> local anaesthetic can not be drained out form upper limb and can not enter in systemic circulation because of inflated cuff in proximal arm.
- The arm is anaesthetized in 6-8 minutes.
- *Lidocaine without adrenaline is the DOC for this technique.- Goodman & Gilman Ilth/e p. 381*
- A few clinician prefers prilocaine over lidocaine because of its higher therapeutic index - least toxic LA.
- Tornique cuff deflation, premature release or failure of torniquet can

cause release of LA into circulation and toxicity

- may occur —> So, cardiotoxic LAs like bupivacaine and etidocaine are contraindicated for Bier's block.

**1970. Which of the following is contraindicated in head injury?**

a) Ketamine

b) Halothane

c) N,0

d) Propofol

Correct Answer - A
Ans. is 'a' i.e., Ketamine

## 1971. Ketamine contraindicated in all except?

a) Head injury

b) Hypertension

c) Asthma

d) Glaucoma

Correct Answer - C
Ans. is `c' i.e., Asthma

- Ketamine increases cerebral blood flow, metabolism, oxygen consumption and intracranial tension, unlike thiopentone, propofol&etomidate, which have cerebroprotectiveeffect, therefore ketamine is contraindicated in head injury, intracranial space occupying lesions and for neuroanaesthesia.
- Cerebrovascular responsiveness to $CO_2$ is preserved, and reducing the arterial $CO_2$ tension by hyperventilation attenuates the ketamine induced rise in ICT.
- Ketamine has direct myocardial depressant (negative ionotropic) & vasodilator effect. However, ketamine also has
- indirect sympathomimetic effect. Indirect sympathomimetic effect predominates over direct myocardial depressant &vasodilator effect; usual response is increased BP, cardiac output and heart rate- Cardiac 02 demand is increased.
- Ketamine is contraindicated in aortic aneurysm, hypertensive and ischemic heart disease. Ketamine also sensitizes
- the heart to adrenaline - arrhythmias may occur.
- As ketamine cause sympathetic stimulation, it is the intravenous anaesthetic of choice in patients with shock and hypovolemia.
- Ketamine increases intra-ocular tension - Contraindicated in glaucoma & open eye surgery.

- It is a potent bronchodilator and relieves bronchospasm - Intravenous anesthetic agent of choice in asthmatic (inhalational anaesthetic agent of choice in asthmatics is halothane)
- It increases uterine tone and intensity of uterine contraction - agent of choice in patients with obstetric haemorrhage and flaccid uterus.
- Injection of ketamine is not painful (all other i.v. inducing agents cause pain on injection).

## 1972. Which of the following is fastest acting inhalational anaesthetic agent?

a) Halothane

b) Desflurane

c) Sevoflurane

d) Isoflurane

Correct Answer - B
Ans. is 'b' i.e., Desflurane
**Blood : Gas partition coefficient (B:G cofflcient)**

- It is the measure of solubility of the agent in the blood. Agent with low blood solubility (low B : G coefficient) will have high concentration in alveolar air as it will diffuse less through the alveolar capillary membrane because of low blood solubility. Since alveolar concentration determines the induction and recovery, induction & recovery will be fast with agent with less B : G partition coefficient; and induction & recovery will be slower with agents with high B : G partition coefficient.
- Desflurane has minimum B : G partition coefficient (least blood solubility) Has Fastest onset and recovery. o Methoxyflurane has maximum B : G partition coefficient (Maximum blood solubility) -4 Has slowest onset & recovery.
- Speed of onset & recovery in decreasing order (Increasing order of B: G partition coefficient and blood solubility):?
- Desflurane (0.42) > Cyclopropane (0.44) > $N_2O$ (0.47) > Sevoflurane (0.69)> Isoflurane (1.38) > Enflurane (1.8) > Halothane (2.4) > Chloroform (8) > Trilene (9) > Ether (12) > Methoxyflurane (15)

**1973. Characteristic EEC pattern seen in surgical tolerance stage of anesthesia is?**

a) Alpha

b) Beta

c) Delta

d) Theta

Correct Answer - C
Ans. is 'c' i.e., Delta

## 1974. Thiopentone is not used in?

a) Induction of anesthesia

b) Medically induced coma

c) As truth serum

d) As antidepressant

Correct Answer - D
Ans. is 'd' i.e., As antidepressant

## 1975. All of the following about thiopentone are true except?

a) It decreases ICT

b) It has anticonvulsant action

c) IV injection is painless

d) It can cause reflex tachycardia

Correct Answer - C
Ans. is 'c' i.e., IV injection is painless

## 1976. Propofol infusion syndrome all except?

a) Occurs with infusion of propofol for 48 hours or longer

b) Occurs in critically ill patients

c) Features are nausea and vomiting

d) Features are cardiomyopathy, hepatomegaly

Correct Answer - C

Ans. is 'c' i.e., Features are nausea and vomiting

**Propofol infusion syndrome**

- A lethal syndrome, associated with infusion of propofol for 48 hours or longer.
- Occurs in children and critically ill.
- Occurs as a result of failure of free fatty acid metabolism and failure of the mitochondrial respiratory chain.
- Features are-cardiomyopathy with acute cardiac failure, metabolic acidosis, skeletal myopathy, hyperkalemia, hepatomegaly and lipemia.

## 1977. Anesthetic agent/s which have tocolytic effect are?

a) Halothane

b) Enflurane

c) Isoflurane

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above

- Halothane, enflurane and isoflurane produce a dose dependent decrease in uterine tone (tocolysis).
- Studies of isoflurane demonstrate that halogenated compounds reduce both the frequency of uterinecontractions and the interval between them.

## 1978. Action of which anesthetic agent is through NMDA receptors?

a) Xenon

b) NO

c) Succinylcholine

d) Etomidate

Correct Answer - A
Ans. is 'a' i.e., Xenon
**Xenon**

- It exerts anaesthetic action by non competitive blockade of NMDA receptors.
- Xenon has been used as a general anesthetic.
- Xenon interacts with many different receptors and ion channels and like many theoretically

## 1979. Following are hepatotoxic anesthetic agents except?

a) Halothane

b) Chloroform

c) Ether

d) Propofol

Correct Answer - D
Ans. is `d' i.e., Propofol
**Zimmermann p. 458]**
**Following are the groups of hepatotoxic anesthetic agents:**

- Group I : Drugs with well known hepatotoxic potential and containing Chlorine or bromine. Eg: chloroform.
- Group II : Drugs which contain fluorine Eg: halothane, methoxyflurane.
- Desflurane, enflurane, sevoflurane, isoflurane, nitrous oxide and carbon tetrachloride are also linked with hepatotoxicity.

## 1980. Drugs used for day care surgery are all except?

a) Propofol

b) Sevoflurane

c) Doxacurium

d) Desflurane

Correct Answer - C
Ans. is 'c' i.e., Doxacurium

## 1981. Anaesthetic of choice for day care srgery is?

a) Thiopentone

b) Nitrous oxide

c) Propofol

d) Halothane

Correct Answer - C
Ans. is 'c' i.e., Propofol

## 1982. All of the following are Nondepolarising muscular blockers except

a) Pancuranium

b) Dexacurium

c) D-Tubocurarine

d) Succinylcholine

Correct Answer - D
Ans. is 'd' i.e., Succinylcholine

## 1983. Which among the following is a depolarising muscle relaxant?

a) Decamethonium

b) D tubocurarine

c) Doxacurium

d) Atracurium

Correct Answer - A
Ans. is 'a' i.e., Decamethonium

- Morgan 4th/e p. 214]
- See explanation-4 of session-3.

## 1984. Longest acting among muscle relaxant is?

a) Doxacurium

b) Rocuronium

c) Vecuronium

d) Atracurium

Correct Answer - A
Ans. is 'a' i.e., Doxacurium

- Among the given options, only doxacurium is long acting.
- See explanation- 4 of session- 3.

## 1985. Atracurium is excreted by

a) Renal excretion

b) Hepatic elimination

c) Nonenzymatic degradation

d) All of the above

Correct Answer - C
Ans. is 'c' i.e., Nonenzymatic degradation

- The unique feature of atracurium is inactivation in plasma by spontaneous nonenzymatic degradation (Hofmann elimination) in addition to that by alkaline ester hydrolysis.
- Consequently its duration of action is not altered in patients with hepatic / renal insufficiency or hypodynamic circulation Preferred muscle relaxant for such patients as well as for neonates and the elderly.o Atracurium is metabolised to laudanosine that is responsible for seizures.
- It can cause histamine release  Hypotension & bronchoconstriction.

## 1986. Which is a safe muscle relaxant in renal failure ?

a) Cisatracurium

b) Rocuronum

c) Vecuronium

d) Succinylcholine

Correct Answer - A
Ans. is 'a' i.e., Cisatracurium

- The unique feature of atracurium and cisatracurium is inactivation in plasma by spontaneous nonenzymatic degradation (Hofman elimination) in addition to that by alkaline ester hydrolysis.
- Therefore both of these do not require hepatic or renal routes for elimination therefore can be used safely in hepatic and renal failure.
- Moreover, cisatracurium does not provoke histamine release, therefore it is preferred over atracurium.

## 1987. Shortest acting non depolarizing muscle relaxant is?

a) Mivacurium

b) Doxacuronium

c) Pipecurium

d) Vecuronium

Correct Answer - A
Ans. is 'a' i.e., Mivacurium

- Suxamethonium (succinylcholine) is the shortest acting skeletal muscle relaxant. o Mivacurium is the shortest acting nondepolarizing skeletal muscle relaxant.

## 1988. True about malignant hyperthermia is all except

a) Most common cause is Sch

b) Dantrolene is the drug of choice

c) End tidal CO, is increased

d) Bradycardia occurs

Correct Answer - D
Ans. is 'd' i.e., Bradycardia

## 1989. DISS is used for ?

a) Correct application of cylinder to anaesthesia machine

b) To provide analgesia

c) To monitor BP

d) To monitor CVP

Correct Answer - A
Ans. is `a' i.e., Correct application of cylinder to anaesthesia machine

## 1990. Laryngeal mask airway not used in ?

a) Baby weighing < 1500gms

b) Pregnant Patients

c) Ocular Surgeries

d) Difficult airway

Correct Answer - B
Ans. is `b' i.e., Pregnant Patients
**Indications of LMA**
1. As an alternative to intubation where difficult intubation is anticipated (difficult airway).
2. To facilitate endo-tracheal intubation in a patient with difficult airways.
3. Situations involving a difficult mask fit.
4. Securing airway (as cardiopulmonary resuscitation) in emergency where intubation and mask ventilation is not possible.
5. For minor surgeries (short surgeries), where anaesthetist wants to avoid intubation.
6. As a conduit for bronchoscopes, small size tubes, gum elastic bougies.
7. For extra and intra-ocular surgeries including retinopathy surgery in premature infants —) LMA is particularly useful in ophthalmic surgery as problems created by other two airways are eliminated : -
8. Face mask creates problem in surgical field access due to its size (LMA provides a better access).
9. Endotracheal intubation may cause raised IOT (LMA has no effect).

**Contraindications of LMA**
1. Conditions with high risk of aspiration i.e., full stomach patients, hiatus hernia, pregnancy.

2. Oropharyngeal abscess or mass (tumor).
3. Massive thoracic injury
4. Massive maxillofacial trauma

**1991.** **The laryngeal mask airway used for securing the airway of a patient in all of the following conditions, EXCEPT:**

a) In a difficult intubation

b) In cardiopulmonary resuscitation

c) In a child undergoing an elective/routine eye surgery

d) In a patient with a large tumour in the oral cavity

Correct Answer - D

Oropharyngeal abscess or mass is a contraindication to the use of laryngeal mask airway.

**Ref:** Short Textbook of Anaesthesia By Ajay Yadav, 2nd Edition, Page 36

## 1992. Which of the following systems can be used to produce PEEP?

a) Spring system

b) Ball valve system

c) Pneumatic system

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above
**anesthesia by Hartigan p. 179] <u>PEEP Valve</u>**

- A PEEP Valve is a device which maintains the airway at end exhalation.
- Spring valve system is the simplest PEEP valve system. Other valve systems for PEEP are electronic, magnetic, pneumatic and ball vale.
- PEEP devices may be integrated into ventilator or may be separate devices that are attached directly into anesthesia circuit, CPAP device or manual resuscitation bag.

**1993. What is the pressure at which oxygen is stored?**

a) 75 psi

b) 1600 psi

c) 760 psi

d) 2200 psi

Correct Answer - D
Ans. is 'd' i.e., 2200 psi

**1994. The most appropriate circuit for ventilating a spontaneously breathing infant during anaesthesia is?**

a) jackson Rees modification of Ayre's T piece

b) Mapleson A or Magill's circuit

c) Mapleson C or Waters to and fro canister

d) Bains circuit

Correct Answer - A
Ans. is 'a' i.e., Jackson Rees modification

## 1995. Standard method to differentiate between endotracheal and esophageal intubation is?

a) End tidal CO2

b) Chest X-rays

c) Auscultation

d) Partial pressure of 02

Correct Answer - A
Ans. is 'a' i.e., End tidal CO2

## 1996. Treatment in post operative shivering?

a) Pethidine

b) Piritramide

c) Methadone

d) Pentazocine

Correct Answer - A
Ans. is 'a' i.e., Pethidine
**Post-anaesthesia shivering (PAS)**

- Post anaesthesia (post operative) shivering occurs in 40% of patients recovering from general anaesthesia.
- Some time it is preceded by central hypothermia and peripheral vasoconstriction, indicating that it is a thermoregulatory mechanism
- Pethidine is most effective drug for treatment of PAS.
- Other drugs used are --clonidine, doxapram, ketanserin, alfentonil, butorphanol, chlorpromazine.

## 1997. Hyperbaric oxygen is not useful in?

a) Anemia

b) Vertigo

c) Gas gangrene

d) Compartment Syndrome

Correct Answer - B
Ans. is 'b' i.e., Vertigo

## 1998. Henrys law states that?

a) At a constant temperature gas dissolves in solution in proportion to its partial pressure

b) At a constant Pressure gas dissolves in solution in proportion to its temperature

c) At a constant temperature gas dissolves in solution in proportion to its fat solubility

d) At a constant pressure gas dissolves in solution in proportion to its fat solubility

Correct Answer - A
Ans. is 'a' i.e., At a constant temperature gas dissolves in so lution in proportion to *its* partial pressure

## 1999. Warfarin to be stopped_____ days before surgery?

a) 2 to 3 days

b) 4 to 5 days

c) 6 to 7 days

d) 8 to 9 days

Correct Answer - B
Ans. is 'b' i.e., 4 to 5 days

- Warfarin may increase peri- operative bleeding, except for minor procedures such as cataract surgery without bulbar blocks. No consensus exists on the optimal perioperative management of patients receiving warfarin.
- The usual recommendation is to withhold warfarin starting 4 to 5 days preoperatively (if the INR is between 2·0 and 3·0) to allow the INR to decrease to less than 1·5, which *is a* level considered safe for surgical procedures and neuraxial blockade.
- If the INR is greater than 3·0, it is usually necessary to withhold warfarin longer than 4 to 5 days.
- If the INR is measured the day before the surgical procedure and remains higher than 1·8, a small dose of vitamin K (1 to 5 mg administrated orally or subcutaneously) can reverse anticoagulation.
- Vitamin K has an effect within 6 to 10 hours after oral or subcutaneous administration (more predictable with oral administration), and it peaks within 24 hours to 48 hours. Administration of higher doses may lead to warfarin resistance when therapy is initiated again.

## 2000. IV dose of 1: 10000 concentration of epinephrine in pre term baby is?

a) 0.1m1

b) 0.2 ml

c) 0.3 ml

d) 0.4 ml

Correct Answer - B
Ans. is 'b' i.e., 0-2 ml
**Epinephrine**

- The IV dose of 1: 10,000 concentration is 0.1m1/Kg. Thus it is about 0.5ml for term baby and 0·2 ml for pre term baby.
- Endotracheal tube dosing is 1m1/ Kg. thus it is about 3m1 for term baby and 1 ml for preterm.

## 2001. Macintosh indicator is used for ?

a) To assess degree of NM blockade

b) Localization of extradural space

c) To assess level of GA

d) To monitor respiratory depression

Correct Answer - B

Ans. is 'b' i.e., Localization of extradural space

- Various methods have been used to locate the epidural (extra dural space), most of which rely on subatmospheric pressure.

**These are :-**

- Loss of resistance to air or saline (most common technique).
- Gutierrez's method : A hanging drop of saline on the hub of needle is drawn in as the epidural space is entered (more reliable in thorocic than lumbar region).
- Odom 's indicator : A fine-bore glass tube filled with saline and a bubble that moves in response to a drop in pressure.
- Macintosh's indicator : A small rubber balloon filled with air connected to an adaptor causing it to deflate on entering the epidural space.
- Macintosh's spring-loaded needle.
- Ultrasonic localization.
- Oxford epidular space detector.

**2002. Following group of drugs is not the first line in the management of chronic pain?**

a) Opioids

b) Antiepileptics

c) Serotonergic drugs

d) Dopamine antagonist

Correct Answer - D
Ans. is 'd' i.e., Dopamine antagonist

## 2003. Which of the following are features of pulmonary oxygen toxicity?

a) Increased capillary endothelial permeability

b) Decreased mucociliary transport in airways

c) Inhibition of phagocytosis function of alveolar macrophages

d) All the above

Correct Answer - D

Ans. is 'd' i.e., All the above

1. Prolonged inhalation of high concentration of 0, is known to damage the lungs.
2. Pulmonary toxicity of 0, is related to the oxygen tension in alveoli.

**<u>The pulmonary oxygen toxicity has the following features</u>**

- Increased capillary endothelial permeability causing accumulation of fluid in the interstitial space.
- Depression of mucociliary transport function of airway
- Inhibition of phagocytosis of alveolar macrophages
- Changes in the surfactant activity and its production.

## 2004. USG is done to visualize all except -

a) Fluid

b) Bile

c) Blood flow

d) Bone

Correct Answer - D
**Answer- D. Bone**
USG is done to visualize soft tissues and fluids. But not for bone.

## 2005. Regarding HRCT, all are true except -

a) Means high reconstruction CT imaging

b) Has narrow beam collimation

c) Investigation of choice for interstitial lung disease

d) Has small field of vision

Correct Answer - A

**Answer- A. Means high reconstruction CT imaging**

**Principles of HRCT (High resolution CT) are :**

1. Narrow beam collimation (Thin collimation)
2. High frequency reconstruction algorythm, e.g., bone algorithm
3. Small field of vision

**2006.** **A PET scan uses which of the following tracer materials?**

a) FDG

b) CDF

c) ADP

d) MIBG

Correct Answer - A

- *Positron emission tomography (PET) uses positron-emitting radioisotope (tracer) - 18F-FDG*
- *A PET scan uses a small amount of a radioactive drug,* or tracer, to show differences between healthy tissue and diseased tissue.
- The most commonly used tracer is called FDG (fluorodeoxyglucose), so the test is sometimes called an FDG-PET scan.
- Very expensive.
- Better contrast and spatial resolution

## 2007. All of the following about MRI are correct except:

a) MRI is contraindicated in patients with pacemakers

b) MRI is useful for evaluating bone marrow

c) MRI is better for calcified lesions

d) MRI is useful for localizing small lesione in the brain

Correct Answer - C
C i.e. MRI is better for calcified lesions
* MRI is very poor in detection of calcification. It is *inferior to CT scan, mammography and x-ray* in detecting calcification. That is why it *lags behind mammography in early detection of noninvasive ductal carcinoma in situ (DCIS)Q,* which most commonly has *microcalcification* as its only presenting feature. And similarly it has *a very limited role in detection of renal stones and gall stonesQ.* However, it is important to note that only upto 60% of gall stones have enough calcium density (more than that of bile) to get visualized on CT. Becaus of its superior calcification detection abilities, MDCT is used in Agatston scoring (Coronary calcium scoring) of *calcified plaques of coronary artery* using coronary calcium as a surrogate marker to detect the presence and measure the amount of coronary atherosclerosis. Because with *exception of patients with renal failure calcification of arteries occurs exclusively in context of atherosclerosis.*
Similarly nonenhanced helical **CT** is *superior to all other imaging modalities in diagnosis of urinary tract calculiQ* but at the cost of higher radiation exposure.
Now there is no need to say that MRI is better that CT for evaluation of bone marrow, small brain lesions, meniscus/ ligament injuries,

soft tissue tumors and meningeal pathology. But MRI is very poor in detection of calcification.

## 2008. An absolute contraindication of MRI is:

a) Pacemaker

b) Prosthetic cardiac valves

c) Insulin pump

d) Choclear implants

Correct Answer - A
Pacemaker *[Ref: Harrison 17/e p2494; Grainger Diagnostic Radiology 4/e p122;*
*various websites-http://www.mr-tip.com/servl.php?ope=dbl &dbs=Prosthetic%20Heart%20Valves*
*http://www. imrser.org/PDF/Shellock.HeartValves.JMRLpdf; http ://www. mrtip. com/se r^y 1.php ?type = dh 1 &dbs= Prosthetic %20Heart %20Valves*
*;and journal- _RadioGraphic s 2004 ;24 : 1257- 1267*

- MR is considered among the *safest imaging modalities* for patients, even at very high field strengths, more than 3-4 tesla.
- But Ferromagnetic objects under magnetic field can be vulnerable to *4 adverse effects:*
- Movement (causing structural injury),
- Current conduction (potentially causing electrical shock),
- Heating (possibly causing burn injury), and
- Artifact generation
- Serious injuries can be caused by attraction of ferromagnetic objects into the magnet, which would act as missiles if brought too close to the magnet.
- Ferromagnetic implants, such as aneurysm clips, may torque (turn or twist) due to the magnetic field, causing damage to vessels and even death.

- Metallic foreign bodies in the eye have moved and caused intraocular hemorrhage.
- Pacemakers and pacemaker leads are a contraindication, as the pacemaker can malfunction and cause arrhythmia or even death.
- However with growing expansion of MR, increasing number of implant medical devices are being MR safe. So newer pacemaker and aneurysm clips are being made which are MR safe.

Absolute Contraindications for the **MRI** scan:

- *Electronically, magnetically, and mechanically activated implants*
- *Ferromagnetic or electronically operated active devices like automatic cardioverter defibrillators*
- *Cardiac pacemakers*
- *Metallic splinters in the eye*
- *Ferromagnetic haemostatic clips in the central nervous system (CNS)*

Patients with an implanted cardiac pacemaker have been scanned on rare occasions, but pacemakers are generally considered an absolute contraindication.

Relative Contraindications for the MRI scan:

- *Cochlear implants*
- *Other pacemakers, e.g. for the carotid sinus*
- *Insulin pumps and nerve stimulators*
- *Lend wires or similar wires (MRI Safety risk)*
- *Prosthetic heart valves (in high fields, if dehiscence is suspected)*
- *Haemostatic clips (body)*
- *Nonierromagnetic stapedial implants*
- *Women with a first-trimester pregnancy*
- *Tattoos (only a problem in higher-strength magnetic field i.e. more than 3 tesla)*

*1Reflittp://www.mr-tip.com/se r[y] 1 .php?type=dbl &dbs= Prosthetic %20Heart%20Valvesi*

**2009.** **Radiocontrast is contraindicated in all of the following conditions except?**

a) Renal failure

b) Patient on metformin

c) Dehydration

d) Obesity

Correct Answer - D

Obesity is not a contra-indication for the administration of radio-contrast agent.

**Ref**: Radiologic Technology at a Glance By Theresa S. Reid-Paul; pages 66.

## 2010. All of the following are true about neutron contrast study except -

a) Provides spatial resolution

b) Hydrogen and boron have high neutron cross section

c) Allows visualization of light elements inside heavy metallic objects

d) Is an example of destructive testing

Correct Answer - D

**Answer- D. Is an example of destructive testing**

Neutrons interact with matter in a way that is quite complementary to X-rays, and so neutron imaging and neutron radiography are important techniques for non-destructive testing, most suited for visualization of light elements in the interior of (heavy) metallic objects.

Examples of high absorption cross- section materials include hydrogen and boron while iron has lower neutron cross-section.

## 2011. In normal X-ray of shoulder which is superior most structure -

a) Greater tubercle

b) Surgical neck of humerus

c) Coracoid process

d) Head of humerus

Correct Answer - C
**Answer- C. Coracoid process**
From superior to inferior (important structure on X-ray sholder) :-
Clavicle : Acromian : Coracoid : Superior margin of humeral head : greater tubercle : anatomical neck : surgical neck.

## 2012. Maximal valve of HU Unit -

a) Water

b) Fat

c) Soft tissue

d) Bone

Correct Answer - D
**Answer- D. Bone**
Bone has maximum HU → +1000

## 2013. Piezoelectric crystal most widely used in ultrasonography probes is -

a) Quartz

b) Molybdenum

c) Titanium

d) Lead zircona tetitanate

Correct Answer - D
**Answer- D. Lead zircona tetitanate**
Lead zirconate titanate (PZT) is the most widely used material in the ultrasound transducers / probes replacing the firstly discovered barium titanate.

## 2014. The principle used in radiotherapy is:

a) Cytoplasmic coagulation

b) Ionising the molecules

c) DNA damage

d) Low dose causes tissue necrosis

Correct Answer - C
Ans. DNA damage
Radiotherapy is the treatment of cancer with ionizing radiation.
It works by damaging the DNA within the tumor cells, making them unable to divide and grow.
The goal of radiation therapy is to maximize the dose to tumor cells while minimizing exposure to normal, healthy cells.

**Ref:** Emami B et al. 1991

## 2015. Adder head appearance is seen in:

***March 2011***

a) Posterior urethral valve

b) Uretrocoele

c) Bladder tumour

d) Horse shoe kidney

Correct Answer - B

Ans. B: Ureterocoele

The 'adder head' on excretory urography is typical of ureterocoele

- Ureterocele is a cystic dilatation of the distal ureter.
- Cobra head or Adder head appearance is diagnostic of ureterocele.
- Spider leg appearance in polycystic kidney.

**Ref:** Bailey & Love, 25th Edition, Page 1290

## 2016. Most sensitive investigation for minimum gas in abdomen is -

a) Chest X-ray AP View

b) CT Scan

c) X-ray abdomen in supine position

d) X-ray abdomen in erect position

Correct Answer - B
**Answer- B. CT Scan**
CT Scan is superior to plain radiographs in detection of minute quatities of pneumoperitoneum
Thus CT Scan is regarded as the most sensitive investigation for detection of minute quantities of intraperitoneal gas.
Best radiographic view for pneumoperitoneum is Chest x-ray. It is usually the first investigation of choice.

## 2017. Cotton wool skull is a radiological feature of -

a) Pagets disease

b) Eosinophilic granuloma

c) Fibrous dysplasia

d) Fibrous dysplasia

Correct Answer - A
**Answer- A. Pagets disease**
Cotton wool skull-Paget's disease
Groundglass skull- Fibrous dysplasia
Punched out/Raindrop lesion of skull- Multiple myeloma
Geographic skull- Eosinophilic granuloma

**2018. The most sensitive imaging modality for diagnosis of ureteric stone in patient with acute renal colic is -**

a) X ray KUB

b) USG

c) Non contrast CT abdomen

d) Contrast enhanced CT abdomen

Correct Answer - C
**Answer- C. Non contrast CT abdomen**
Non-contrast spiral CT has now become the investigation of choice to diagnose renal and ureteric stones.
Investigation of choice for renal and ureteric stones non - contrast spiral CT

## 2019. Radiological features of coarctation of aorta is/ are -

a) Reverse figure of 3 sign

b) Dock sign

c) Double aortic knuckle

d) All of the above

Correct Answer - D
**Answer- D. All of the above**
Radiological signs of COA are : i) Reverse figure of 3 sign (double bulge sign or E sign), ii) Dock's sign; iii) Double aortic knuckle.
Globular heart with oligemic lung fields
Reverse figure of '3' sign
Double aortic knuckle

## 2020. Eye of tiger appearance is seen in -

a) Halle vorden Spatza

b) Suparanuclear palsy

c) Levodopa-responsive

d) All

Correct Answer - D
**Answer- D. All**
**This appearance can be seen in:**
1. Hallervorden-Spatz syndrome: classical but not 100% pathognomonic
2. Progressive supranuclear palsy
3. Early-onset levodopa-responsive parkinsonism
4. Cortical-basal ganglionic degeneration

## 2021. Tufting of distal phalanx is characteristically seen in

a) Gout

b) Hyperkalemia

c) Hypoparathyroidism

d) Hyperparathyroidism

Correct Answer - D

**Ans. is. D. Hyperparathyroidism**

Acro-osteolysis is the term used to describe resorption of the distal phalangeal tufts. Causes are : -

1. Scleroderma
2. Trauma & thermal injury
3. Hyperparathyroidism
4. Epidermalysis bullosa
5. Arthropathy (RA, Psoriasis)
6. Neuropathy (diabetes, syringomyelia

## 2022. Soap Bubble appearance in X-ray is seen in

a) Multiple cystic Kidney

b) Neuroblastoma

c) Cystic lymphagiectasis

d) Meconium ileus

Correct Answer - D
D i.e. Meconium ileus

- Soap bubble appearance in X ray is seen in meconium ileus due to admixture of gas with meconium.

## 2023. Mercedes Benz sign is seen in:

a) Gall stone

b) Bladder stone

c) Renal stones

d) Foreign body bronchus

Correct Answer - A
Gall stone REF: Sutton's textbook of radiology, $T^{h}$ edition, volume 1 page 713
Mercedes Benz sign/Seagull sign/Crow feet sign:
Gall bladder stone if radiopaque has a stellate faceted appearance with gas containing fissures on the plain radiograph and is called as Mercedes Benz sign/Seagull sign or Crow feet sign

## 2024. Coffee bean sign is seen in?

a) Gastric volvulus

b) Sigmoid volvulus

c) Hypertrophic pyloric stenosis

d) Midgut volvulus

Correct Answer - B

Sigmoid volvulus REF: Wofganag 5th e p· 846/748

| Sign | Disease |
|---|---|
| Rat tail appearance | Carcinoma esophagus |
| Bird beak appearance | Achalasia |
| Beak sign/double track/ tram track | Hypertrophic pyloric stenosis |
| Medusa head colonies on CT | Round worm |
| Pincer/claw/coiled spring/target/meniscus sign | Intussception |
| Coffee bean sign | Sigmoid volvulous |
| Lead pipe appearance | Ulcerative colitis |
| String of kantor/bull's eye | Chron's disease |
| Thumb printing sign | Ischemic colitis |
| Saw tooth appeance on barium enema | Diverticulosis |
| Apple core sign | Carcinoma colon |
| Cork screw appearance | Diffuse esophageal spasm |
| String sign | Hypertrophic pyloric stenosis |

## 2025. Following are suggestive of benign lesion on mammogram -

a) Macrocalcification

b) Floating calcification

c) Tramline calcification

d) All the above

Correct Answer - D

**Answer- D. All the above**

**Calcification patterns in benign lesions of breast on mammography:**

1. Macrocalcification
2. Popcorn (in fibroadenoma)
3. Rod like wide-spread
4. Egg shell curvilinear
5. Tramline / tortous

## 2026. Anamoly scan done at how many weeks of gestation -

a) 14

b) 16

c) 18

d) 20

Correct Answer - D
**Answer- D. 20**
Anamoly Scan is done between 18-21 weeks of pregnancy. It is also called as mid pregnancy or 20-week scan.

**2027. Flowing wax appearance on anterior and posterior borders of vertebrae is seen in -**

a) Ankylosing spondylitis

b) DISH

c) Psoriatic arthropathy

d) Rheumatoid arthritis

Correct Answer - B

**Answer- B. DISH**

Diffuse idiopathic skeletal hyperostosis : DISH (hyperostotic spondylosis, Forestier's disease) is a multifocal entity of older people characterized by 'flowing ossifications of the spine'' involving four or more contiguous vertebrae and hyperostosis of some ligamentous attachments.

## 2028. Caldwell view is done for

a) Sphenoid sinus

b) Maxillary sinus

c) Ethmoid sinus

d) Frontal sinus

Correct Answer - D

Caldwell view is the occipito frontal view. The frontal sinuses are seen clearly in this view.

## 2029. Radiological view which best shows maxillary sinus and orbit is -

a) Water's view

b) Caldwell view

c) Lateral view

d) Towne view

Correct Answer - A
**Answer- A. Water's view**
Best view for maxillary sinus → Water's view (occipito-mental view)
Best view for frontal sinus → Caldwell view (occipito-frontal view)
Best view for sphenoid sinus → Basal view (submentovertical view)

## 2030. Best view for sphenoid sinus is -

a) Water's view

b) Caldwell view

c) Basal view

d) Towne's view

Correct Answer - C
**Answer- C. Basal view**
Best view for maxillary sinus → Water's view (occipito-mental view)
Best view for frontal sinus → Caldwell view (occipito-frontal view)
Best view for sphenoid sinus → Basal view (submentovertical view)

## 2031. Following are the indications of barium meal X-ray except -

a) Duodenal ulcer

b) Carcinoma stomach

c) Carcinoma head of pancreas

d) Ischemic Colitis

Correct Answer - D
**Answer- D. Ischemic Colitis**
**Indications for Barium meal X-ray**

- Duodenal ulcer
- Periampulary carcinoma
- Psendocyst of pancreas
- Carcinoma stomach
- Chronic duodenal ileus
- Carcinoma head of pancreas
- Duodenal diverticula

## 2032. In a children ectopic kidneys can be diagnosed by -

a) DTPA

b) DMSA

c) MAG 3

d) None of the above

Correct Answer - B
**Answer- B. DMSA**
**Indications for static renal scintigraphy (Tc - 99m - DMSA) :**
1. Assessment of reflux nephropathy (scars)
2. Space occupying lesions (cortical mass)
3. Investigation of horse shoe, solitary or ectopic kidney

**2033. Gestational sac can be seen using ultrasonography at the earliest by:** ***Gujarat 07***

a) 3rd week

b) 4th week

c) 5th week

d) 8th week

Correct Answer - C
Ans. 5th week

- The gestational sac can be visualized as early as 41/2 weeks by transvaginal USG and 5 weeks by transabdominal USG.

## 2034. First line investigation for deep venous thrombosis is -

a) Ultrasonography

b) Venography

c) MRI

d) Nuclear imaging

Correct Answer - A
**Answer- A. Ultrasonography**
Ultrasonography is the current first-line imaging examination for DVT because of its relative ease of use.

## 2035. Which of the following is not a chest radiographic feature of left atrial enlargement?

a) Double left heart border

b) Elevated left main bronchous

c) Splaying of carina

d) Enlargement of left atrila appendage

Correct Answer - A

**Answer- A. Double left heart border**

**Sings of left atrial enlargement**

- Straightening of left heart border (due to enlargement of left atrial appendage).
- Elevation of left main bronchus with widening (Splaying) of carina.
- Double density (atrial) sign.
- Posterior displacement of esophagus on barium swallow.

## 2036. Floating water lily sign is seen in

a) Aspergillosis

b) Hamartoma

c) Hydatid cyst

d) Cavitating metastasis

Correct Answer - C
Hydatid cyst *[Ref Radiology Review Manual by Dahnert 5/e, p 699;* vviviv.emedicine.00In/Ined/TOPIC629.htn]

- Separated membranes floating with the cyst give the appearance of water lily.
- It is pathognomonic of hydatid cyst.

## 2037. HRCT features of interstitial pneumonia are all except -

a) Reticular opacities

b) Honeycombing

c) Ground glass opacities

d) No bronchieactatic features

Correct Answer - D

**Answer- D. No bronchieactatic features**

**Classical HRCT features of interstitial pneumonia are:**

1. Reticular opacities in basal and peripheral distribution.
2. Traction bronchiestasis.
3. Honeycombing (clustered airspaces 3-10mm diameter/in subpleural location.

## 2038. Following are the causes of cavity in lungs except -

a) Staphylococcus

b) Wegeners

c) Hydatid

d) Sarcoidosis

Correct Answer - D
**Answer- D. Sarcoidosis**
**Causes of lung cavities are :**
1) Necrotizing infections
2) Vascular : Pulmonary infarction.
3) Neoplastic :
Carcinoma bronchus :- Especially squamous cell carcinoma.
Metastases
Lymphoma
4) Granulomas :- Wegener's granulomatosis, Rheumatoid arthritis (also Kaplan's syndrome)
5) Abnormal lung :- Infected emphysematos bulla, sequestrated segment, bronchogenic cyst.
6) Traumatic :- Haematoma

## 2039. Beaded lumen with fimbrial fluid is seen in -

a) TB of fallopian tube

b) TB of endometrium

c) TB of Ovary

d) None

Correct Answer - A

**Answer- A. TB of fallopian tube**

Fallopian tube is the most common site of female genital tract which is affected in tuberculosis.

On hysterosalpingography, the fallopian tube often show ragged outlines with multiple strictures, giving a beaded appearance; in some patients the entire tube appears rigid and may exhibit small terminal sacculation of the ampullary end.

## 2040. Following are radiological findings in rheumatoid arthritis except -

a) Symmetrical involvement

b) Juxta-articiular osteopenia

c) Marginal erosion

d) Subchondral sclerosis

Correct Answer - D

**Answer- D. Subchondral sclerosis**

**Rheumatoid arthritis**

- Bilateral symmetrical involvement
- Marginal erosion
- Ankylosis
- Periarticular soft tissue swelling
- Subchondral cysts
- Subluxation or dislocation
- Juxta - articular osteopenia
- Narrowing of joint space (Later)
- Arthritis multilans (late)

## 2041. Which of the following is/are radiological features of fluorosis?

a) Osteosclerosis

b) Cortical thickening

c) Enthesopathy

d) All the above

Correct Answer - D
**Answer- D. All the above**
**Radiological features of fluorosis are :**

- Osteosclerosis - particularly affecting the axial skeleton.
- Cortical thickening with encroachment on medullary cavity.
- Enthesopathy with ligamentous ossification.
- Large spinal osteophytes.

## 2042. Depth of gastric carcinomas is assessed by -

a) Abdominal ultrasound

b) Barium meal

c) Endoluminal ultrasound

d) Laproscopy

Correct Answer - C
**Answer- C. Endoluminal ultrasound**
Five layers of the gastric wall can be identified by endoluminal ultrasound and the depth of invasion of tumor can be assessed by exquisite accuracy.

## 2043. Radiological signs of acute pancreatitis on plain radiography are -

a) Sentinel loop sign

b) Colon cut off sign

c) Renal halo sign

d) All the above

Correct Answer - D

**Answer- D. All the above**

**Radiological features of acute pancreatitis :-**

1. Air in duodenal C-loop
2. Colon cut off sign
3. Gasless abdomen
4. Sentinal loop sign
5. Renal Halo sign

## 2044. Gold standard investigation for chronic pancreatitis?

a) MRI

b) ERCP

c) Pancreatic function tests

d) Fecal fat estimation

Correct Answer - B

**Answer- B. ERCP**

- ERCP has been considered the most sensitive radiologic test for the diagnosis of chronic pancreatitis, with specific ERCP findings that are highly correlative with the degree or stage of chronic disease.

## 2045. Most sensitive investigation for Diffuse axonal injury is -

a) MRI

b) CT

c) X ray

d) PET scan

Correct Answer - A
**Answer- A. MRI**
MRI is the most sensitive investigation for diffuse axonal injuries. It shows multiple small faces of increased intensity on T,IAT and decreased intensity on Ty.

## 2046. Most common view used for X-ray chest -

a) PA view

b) AP view

c) Lateral view

d) Oblique view

Correct Answer - A
**Answer- A. PA view**
**Important views for chest x-ray are :**
1. Posterior - anterior view (PA view)
2. Anterior - posterior view (AP view)
3. Lateral view
4. Lateral decubitus view

## 2047. Best investigation for bone metastases is -

a) MRI

b) CT

c) Bone Scan

d) X Ray

Correct Answer - C
**Answer- C. Bone Scan**
Bone scan (scintigraphy) is the investigation of choice for bone metastasis.

## 2048. Double track sign is seen in -

a) Duodenal atresia

b) CHPS

c) Gastric ulcer

d) Achalasia

Correct Answer - B
**Answer- B. CHPS**
Double/triple track sign is seen in congenital hypertrophic pyloric stenosis.

## 2049. Half life of Ra-226 -

a) 8 days

b) 28 years

c) 16-22 years

d) 38 years

Correct Answer - C
**Answer- C. 16-22 years**
Half life of Ra-226 is 16-22 years.

## 2050. Which view is taken for aortic window -

a) AP

b) LAO

c) RAO

d) LPO

Correct Answer - B
**Answer- B. LAO**
`A left anterior oblique (LAO) view is useful to assess thoracic aorta, aortic window and the chamber of heart".
**Clinicalradiology**

- Aortic window is the space between ascending and descending thoracic aorta.

## 2051. Best imaging modality in patients with breast implants is:

a) MRI scan

b) CT scan

c) Mammography

d) Radionuclide scan

Correct Answer - A
Ans. MRI scan
It is the best imaging modality for the breasts of women with implants.
MRI can be usefirl to distinguish scar from recurrence in women who have had previous breast conservation therapy for cancer

## 2052. The primary diagnostic evaluation for developmental dyslasia of hip is -

a) Clinical examination

b) X-ray

c) USG

d) CT Scan

Correct Answer - C
**Answer- C. USG**
Ultrasonography is now the primary imaging technique in the diagnosis and follow up of DDH and has been shown to be more accurate than clinical and radiological assessment with a sensitivity of 100% and specificity of 98%.

## 2053. Hummingbird sign in brain MRI is seen in ?

a) Multiple sclerosis

b) Progressive supranuclear palsy

c) Parkinson's disease

d) Alzheimer disease

Correct Answer - B
**Ans. is 'b' i.e., Progressive supranuclear palsy**
[Ref Clinical neurology - 113]

- Hummingbird sign on brain MRI is a radiological sign of progressive supranuclear palsy.

## 2054. Investigation of choice for pancoast tumor is -

a) MRI

b) HRCT

c) CECT

d) Bronchography

Correct Answer - A
**Answer- A. MRI**
Radiological investigation of choice for pubnonary malignencies is CT scan excep in superior sulcus (pancoast tumor) where MRI is preferred.

## 2055. Well defined rounded opacity is the lung with cause irregular calcification is a feature of:

a) Hamartoma

b) Hydatid cyst

c) Amoebic abscess

d) Ca lung

Correct Answer - A
Ans. Hamartoma

- Irregular central calcification (Popcorn calcification) is characteristic of hamartoma.

## 2056. Emile Durkheim is linked with work on which condition in psychiatry?

a) Suicide

b) Obsessive compulsive disorder

c) Anxiety disorder

d) Schizophrenia

Correct Answer - A
**Ans. A. Suicide**
**Suicide (French: Le Suicide)**

- It was a groundbreaking book in the field of sociology.
- It was written by French sociologistEmile Durliiheim and pubtshed in 1897.
- It was ostensibly a case study of suicide, a publication unique for its time that provided an example of what the sociological monograph should look like.

## 2057. Highest insight is ?

a) Intellectual

b) Emotional

c) Psychological

d) Affective

Correct Answer - B

**Ans. b. Emotional**

**Neziroglu and Stevens proposed four different levels of insights:**

- True emotional insight
- Intellectual insight
- Partial internally and externally based insight
- Denial of illness
- True emotional insight is representative of the highest level of insight possible. In it the patients' awareness and understanding of their own thoughts, feelings and motives can be used to change behavior.

## 2058. Extracampine hallucinations term was given by ?

a) Eugene Bleuler

b) William Harvey

c) Robert Macinoff

d) Eden Speroff

Correct Answer - A
**Ans. A. Eugene Bleuler**
**Extracampine hallucinations**

- The term extracampine is indebted to Latin words extra - outside and campaneus - field.
- It was introduced in or shortly before 1903 by Swiss Psychiatrist Eugene Bleuler to denote a hallucination that is experienced by affected individual as being outside the range of normal perception.

## 2059. Hypomimia is ?

a) Decreased ability to copy

b) Decreased execution

c) Deficit of expression by gesture

d) Deficit of fluent speech

Correct Answer - C

**Ans. C. Deficit of expression by gesture**

**Hypomimia**

- Hypomimia or amimia is a deficit or absence of expression by gesture or mimicry.
- This is usually most obvious as a lack of facial expressive mobility (mask - like facies).
- This is a feature of frontal subcortical disease.

## 2060. Serial 7 substraction is used to test ?

a) Working memory

b) Long term memory

c) Mathematical ability

d) Recall power

Correct Answer - A
**Ans. A. Working memory**
**Serial sevens substraction test**

- Serial sevens, counting down from one hundred by sevens, is a clinical test used to test mental function; for example, to help assess mental status after possible head injury or in suspected cases of dementia.
- This well-known test, in active documented use since at least l944,was adopted as part of the mini-mental state examination.
- The test is also used in determining when a patient is becoming unconscious under anaesthetic, for example prior to major dental surgery.

**2061. Which of the following are sections of mental state examination?**

a) Mood and affect

b) Speech and language

c) Cognition

d) All the above

Correct Answer - D
**Ans. D. All the above**

## 2062. Obsessive attention by an individual towards another person is called ?

a) Stalking

b) Percieving

c) Following

d) Pressurizing

Correct Answer - A

**Ans. A. Stalking**

**Stalking**

- Stalking is unwanted or obsessive attention by an individual or group toward another Person.
- Stalking behaviors are related to harassment and intimidation and may include following the victim in person or monitoring them.
- The word stalking is used, with some differing meanings, in psychology and psychiatry and also in some legal jurisdictions as a term for a criminal offense.

## 2063. Most common of all psychiatric disorders are -

a) Anxiety disorder

b) Schizophrenia

c) Depression

d) Mania

Correct Answer - A

**Ans. A. Anxiety disorder**

- Most common psychiatric disorder > Anxiety disorders.
- 2d most common psychiatric disorder > Depression.

## 2064. Patient wants to scratch for itching in his amputated limb is an example of ?

a) Illusion

b) Pseudohallucination

c) Phantom limb hallucination

d) Autoscopy hallucination

Correct Answer - C

**Ans. C. Phantom limb hallucination**

- Phantom limb hallucination - The person feels his body parts intact in their respective places even after they are lost through amputation or injury.
- In the question given patient feels itching in the amputated limb and tries to scratch the limb. Thus it is an example of phantom limb hallucination.

## 2065. Myxedema madness includes ?

a) Auditory hallucinations and paranoia

b) Visual hallucinations and depression

c) Auditory hallucinations and depression

d) Paranoia and depression

Correct Answer - A

**Ans. A. Auditory hallucinations and paranoia**

**Psychiatric disorders in hypothyroidism**

- These include depressed mood, apathy, impaired memory and other cognitive defects.
- Hypothyroidism can contribute to the development of treatment refractory depression.
- Myxedema madness consisting of auditory hallucinations and paranoia is seen in some Patients.

## 2066. APACHE II does not include ?

a) Acute physiology score

b) Age

c) Sex

d) Chronic health evaluation

Correct Answer - C

**Ans. C. Sex**

- Acute physiology and chronic health evaluation
  - Knaus et al (1981) introduced the first the Acute Physiology and Chronic Health Evaluation (APACHE) model in 1981 and revised it to APACHE II in 1985. APACHE III was presented in 1991 but as the regression analysis modelling is not in the public domain its uptake has been slow.

**APACHE II is made up of four basic comPonents:**

1) Acute physiology score;
2) Chronic health evaluation;
3) Age;
4) Urgency of admission to critical care

## 2067. SSRIs should be carefully used in the young for the management of depression due to increase in?

a) Nihilism ideation

b) Guilt ideation

c) Suicidal ideation

d) Envious ideation

Correct Answer - C

**Ans. C. Suicidal ideation**

- In 2003, th UK Medicine and Health Care products regulatory agency concluded that all SSNs, with the exception of fluoxetine, were contraindicated in the treatment of depression in young people due to increase in suicidal ideation and dubious efficacy.

**2068. If a person is asked, "what will he do if he sees a house on fire"?, Then what is being tested in that person ?**

a) Social judgement

b) Test judgement

c) Response judgement

d) None of the above

Correct Answer - B

**AnS. B. Test judgement**

**Judgement**

- It is the ability to assess a situation correctly and act appropriately within that situation'
- Social judgement: is observed during the hospital stay and during the interview session. It includes evaluation of personal judgement.
- Test Judgement: is assessed by asking the patient what he would do in certain test situations like - house on fire, man lying on road.
- It is rated as good/ intact normal or poor/ impaired/abnormal'

## 2069. What is produced by the supersensitivity of Dopamine receptors ?

a) Dyskinesia

b) Hyperphagia

c) Hyperpathia

d) Hypomania

Correct Answer - A
**Ans. is 'a' i.e., Dyskinesia**
(Ref: Pathophysiology, pharmacology and biochemistry of dyskinesia p. 195)

- Increased neostriatal dopamine receptor density and dopaminergic supersensitivity in the neuroendocrine system are associated with the development of tardive dyskinesia.

**2070.** **The most common substance of abuse in India:**

a) Cannabis

b) Tobacco

c) Alcohol

d) Opium

Correct Answer - A

By most estimates, cannabis (Indian hemp plant) remains the *world's most commonly used illicit drug.*

Cannabis is perhaps the most widely used drug in India too, due to it's easy availability. Cannabis, a substance that has been traditionally used in India as an intoxicant.

It is produced from the plant cannabis saliva or Indian Hemp plant. It grows in the wild over most parts of the country.

**Ref:** Kaplan & Sadock's Synopsis of Psychiatry 9th Edition, Page 444, 424-27; Park's Social and Preventive Medicine 18th Edition, Page 635; Shorter Oxford Textbook of Psychiatry 5th Edition, Page 332-342

## 2071. Illusion is a disorder of ?

a) Thought

b) Perception

c) Affect

d) Emotion

Correct Answer - B
**Ans, B. Perception**
**Disorders of perception**
1. Altered perception - Sensory distortion (micropsia, hyeracusis), Illusion.
2. False perception - Hallucination.

## 2072. Rope seen as snake is an example of -

a) Illusion

b) Hallucination

c) Delusion

d) Pseudohallucination

Correct Answer - A

**Ans. A. Illusion**

- llusions are altered perception in which a real eternal object is combined with imagery to produce false internal percept.
- In simple words, illusion is misinterpretation of an actual sensory input.

**For example: -**

1. Hearing once name in a train whistle:- Train whistle is a real eternal stimulus, which is perceived as once name (false internal percept).
2. Mistaking a stick or rope for snake in dark room:- Stick is a real external object, which is perceived falsely as snake.

**2073. Woman firmly and persistently feels her husband is cheating on her and she disapproves to accePt any proof given in the husbands support' The other family members do not supportherbelief. This is anexample of-**

a) Illusion

b) Delusion

c) Hallucination

d) Perversion

Correct Answer - B

**Ans. B. Delusion**

- In the question given the woman has a false unshakable belief that her husband is cheating on her and she disapproves all her relatives and proofs in support of her husband.
- Thus this is an example of delusion.

## 2074. All of the following are formal thought disorder EXCEPT:
***March 2013 (b, c, h)***

a) Schizophrenia

b) Delusion

c) Loosening of association

d) Mania

Correct Answer - B
Ans. B i.e. Delusion
*Delusion is a disorder of thought content (NOT a formal thought disorder/disorder of thought process)*
**Delusion**
- Disorder of thought;
- False unshaken belief not amenable to reasoning

**Hallucination**
- Disorder of perception;
- Perception in the absence of external stimuli;
- Not dependent of will of observer

**Illusion**
- Misinterpretation of external stimuli

## 2075. Withdrawal of which of the following causes piloerecton?

a) Morphine

b) Cannabis

c) Smoking

d) Alcohol

Correct Answer - A
**Ans. A. Morphine**
**Manifestations of morphine withdrawal**

- Lacrimation
- Anxiety & fear
- Sweating
- Restlessness r
- Yawning
- Gooseflash (Piloerection).

## 2076. Schizotypal personality belongs to which cluster of personality disorders?

a) A

b) B

c) C

d) D

Correct Answer - A
**Ans. A. A**

- Cluster A: Paranoid, Schizoid, Schizotypal.
- Cluster B: Antisocial (Dissocial), Histrionic, Narcissistic, Borderline.
- Cluster C: Anxious (avoidant), Dependent, obsessive - compulsive (anankastic).

## 2077. Cardinal feature of antisocial personality -

a) Violation of rules of society

b) Attention - seeking behavior

c) Unstable interpersonal relationship

d) Grandiose behaviour

Correct Answer - A

**Ans. A. Violation of rules of society**

- The essential features of antisocial personality disorder are a disregard for and violation of the rights of the other and the rules of the society.

## 2078. Markedly inappropriate sensitivity, self importance and suspiciousness are clinical features of

a) Aantisocial

b) Historic

c) Schizoid

d) Paranoid

Correct Answer - D
D i.e. Paranoid P

**2079.**

## Which personality disorder/s can be a part of autistic sPectrum of disorders?

a) Schizoid

b) Schizotypical

c) Borderline

d) All the above

Correct Answer - D

**Ans. D. All the above**

- Following personality disorders can be diagnosed later in life in patients with childhood autistic spectrum of disorders: Borderline, Obsessive compulsive, narcissitic, paranoid, schizotypical and, avoidant, personality.

## 2080. Patients who are grandiose and require admiration from others has which type of personality?

a) Narcissistic

b) Histrionic

c) Borderline

d) Antisocial

Correct Answer - A

**Ans. A. Narcissistic**

- Grandiosity and admiration from others are feature of Narcissistic personality disorder.

## 2081. Max duration of time spent is in NREM stage?

a) I

b) II

c) III

d) IV

Correct Answer - B

**Ans, B. II**

- REM sleep occupies 20-30% of total sleep and NREM sleep ocupies 60-70% (state I: 5-70%, stage II : 40-50%, stage III & IV : 15_20%)

## 2082. All are true about narcolepsy except:

a) Day dreaming

b) Hypnagogic hallucinations

c) Cataplexy

d) Sudden sleep

e) Decreased REM latency

Correct Answer - A

**Ans. (A) Day dreaming**

[Ref Neeraj Ahuja 7th/ I j8-39; Kaplan & Sailockls Textbook of psychiatry 11th/547-50; Harrison 19th/189, t7th/172- ZB; CMDT 2016/1072]

**Narcolepsy:**

- Disorder characterized by excessive daytime sleepiness often distributed night time sleep and disturbances in REM sleep.
- Hallmark of this disorder is decreased REM latency, I.e. decreased latent period before the first REM period occurs.
- Normal REM latency is 90- 100 minutes, in narcolepsy, REM sleep occurs within 10 minutes of the onset of sleep.

**Classical tetrad of symptoms:**

- Sleep attacks (MC)
- Cataplexy
- Hallucinations at sleep onset (Hypnagogic) and upon waking (Hypnopompic)
- Sleep paralysis.

**2083.** **All the following are true regarding pseudocyesis, EXCEPT:**

a) The patients usually have an intense desire to have children

b) Change in the breast may be present

c) There may be considerable increase in the size of the abdomen

d) The labour pain invariably continue to persist even if she is told that she is not pregnant

Correct Answer - D

Pseudocyesis or phantom pregnancy is usually seen in patients nearing menopause or in young women who intensely desire children.
Most of them suffer from some forms of psychic or hormonal disorder.
The abdomen may distend due to deposition of fat.
The pregnancy may progress to full term and the labour pain may stop abruptly when informed that she is not pregnant.

**Ref:** Textbook of Forensic Medicine and Toxicology by Narayan Reddy, Edition 21, Page - 333

## 2084. Post traumatic stress disorder (PTSD) is differentiated from all other disorders by:

a) Nightmares about events

b) Autonomic arrousal and anxiety

c) Recall of events and avoidance of similar experiences in PTSD

d) Depression

Correct Answer - C
C i.e. Recall of events and avoidance of similar experiences in PTSD
- PTSD arises as response to *traumatic event (criteria A) that is characterized by persistent re-experience (criteria B), persistent avoidance and numbness (C), hyperarousal (D), of > 1 month duration (criteria E) causing significant distress & impaired functioning (criteria F)Q.* The onset may be delayed (6 months to years after event).
- PTSD arises as a *delayed/protracted response to an exceptionally stressful or catastrophic life event or situation* which is likely to cause pervasive distress in almost any person (eg. *disaster, war, rape, torture, serious accident).* It *may develop even after 6 months to years after stressorQ.*
- PTSD is characterized by *peristent/recurrent intrusive distressing recollections of stressful event either in flashbacks (images, thoughts or perceptions), dreams, reliving experiences, illusions, hallucinations* or distress/ physiological reactivity on exposure to reminders of traumatic events. There is marked (persistent) avoidance of stimuli/events or situations that arouse recollection of

stressful events and *increased arousal (hyperarousal) and numbing of general responsivenessQ.*
Partial amnesia for some aspects of stressful events, anhedonia (inability to experience pleasure) and alexithymia (characterized by inability to identify & articulate feelings) may be present.

## 2085. Catatonia is a type of:
*September 2007*

a) Schizophrenia

b) Phobia

c) Depression

d) OCD

Correct Answer - A
Ans. A: Schizophrenia
Schizophrenia is a severe, persistent, debilitating, and poorly understood psychiatric disorder that probably consists of several separate illnesses.
Symptoms include disturbances in thoughts (or cognitions), mood (or affects), perceptions, and relationships with others. The hallmark symptoms of schizophrenia are auditory hallucinations and delusions, which are fixed false beliefs. The symptoms of schizophrenia may be divided into the following 4 domains:
Positive symptoms: These include psychotic symptoms, such as hallucinations, which are usually auditory; delusions; and disorganized speech and behavior.
Negative symptoms: These include a decrease in emotional range, poverty of speech, loss of interests, and loss of drive.
Cognitive symptoms: These include neurocognitive deficits, such as deficits in working memory and attention and executive functions such as the ability to organize and abstract.
Mood symptoms: Schizophrenia patients often seem cheerful or sad in a way that does not make sense to others. They often are depressed.
**Catatonia Schizophrenia**

This syndrome occurs in children, adolescents, and adults; is associated with a heterogeneous group of comorbid conditions; and is characterized by a variety of symptoms and signs of impairment of the expression of voluntary thoughts and movements.
Typically, the syndrome of catatonia is episodic, with periods of remission.

**It can presents in three clinical forms:**

- Excited catatonia
  Stuporous catatonia
  Catatonia alternating between excitement and stupor.

## 2086. Spouse jealousy is a feature of ?

a) Othello syndrome

b) Chronic alcoholism

c) Stockholm syndrome

d) Clerambault's syndrome

Correct Answer - A
**Ans. A. Othello syndrome**
**Othello Syndrome:**

- When the content of delusions is predominantly jealousy (infidelity) involving the spouse, person feels an unreasonable fear that a partner has been unfaithful, is presently unfaithful, or plans to be unfaithful, it is called as Othello Syndrome or conjugal paranoia.
- Elaborate steps are taken to prevent the spouse to go outside (Locks the spouse, not allowing her to go outside).

## 2087. All of the following are true about pseudohallucinations except ?

a) Arises in inner subjective self

b) Patient describes the sensations being perceived by mind eye

c) Are under voluntary control

d) Distressing flashback of PTSD is a n example

Correct Answer - C

**Ans.C. Are under voluntary control**

**Pseudohallucination**

- Pseudohallucination is a perceptual experience, which differs from a hallucination in that it appears to arise in the inner subjective space, not through one of the external sensory organs.
- Patients tend to describe these sensations as being perceived with the 'inner eye' or 'mind eye' (or ear).
- However, like true hallucinations pseudohallucinations are not under voluntary control.
- Example include: Distressing flashbacks in post-traumatic stress disorder or the recently bereaved widow waking up to briefly 'see' her husband sitting at the foot of the bed,

## 2088. Delirium is defined as ?

a) Acute onset of disturbed consciousness

b) Chronic onset of disturbed consciousness

c) Progressive generalized impairment of intellectual functions and memory without impairment of consciousness

d) Disorientation without clouding of consciousness

Correct Answer - A

**Ans. A. Acute onset of disturbed consciousness**

- Delirium is defined by the acute onset of fluctuating cognitive impairment and a disturbance of consciousness.
- It is also referred to as acute confusional state or acute organic brain syndrome.

**2089. All the following drugs are used to prevent relapse and maintain abstinence in cases of alcohol withdrawal except ?**

a) Disulfiram

b) Acamprosate

c) Naltrexone

d) Propranolol

Correct Answer - D

**Ans. D. Propranolol**

- Detoxification (treatment of withdrawal):- BZDs are the drugs of choice, e.g. chlordiazepoxiile (Id choice), Diazepam (2nd choice).

**Maintenance after detoxification (to prevent relapse and maintenance of abstinence):-**

1. Aversive agent (ileferent agents):- Disulfiram, CCC, metronidazole, Natrafezole.
2. Anticraving agent: - Naltrexone, Acamprosate, fluoxetine, Topiramate, Nalmefene.

## 2090. Treatment of acute alcohol withdrawal:
***Punjab 09***

a) Diazepam

b) Bupropion

c) Disulfiram

d) Acamprosate

Correct Answer - A
Ans. Diazepam

## 2091. True about RETT Syndrome –

a) Macrocephaly

b) Cardiac arrhythmia

c) Seizures

d) Mental retardation

e) Autistic behaviour

Correct Answer - B:C:D:E

**Ans. is'b'i.e., Cardiac arrhythmia,'c'i.e., Seizures,'d'i.e., Mental retardation &'e'i.e., Autistic behaviour**

**Rett's Syndrome**

- This is the characteristic features, that they begin to loose their acquired skills, e.g., cognitive and head growth is normal during early period after which there is an arrest of growth.
- Acquired microcephaly
- Most children develop peculiar sighing respirations with intermittent periods of apnea that may be associated with cyanosis → Breath holding spells.
- Autistic behaviour → Impaired social interaction, language and communication.
- Generalized tonic-clonic convulsions occur in the majority.
- Feeding disorder and poor weight gain

**2092.** **Which of the following could be a component of conversion disorder?**

a) Pseudoseizures

b) Derealisation

c) Depersonalisation

d) Amnesia

Correct Answer - A

Pseudoseizure can occur in conversion disorder.
Paralysis, blindness and mutism are the most common conversion disorder symptoms.
Anaesthesia and paresthesia especially of the extremities are the most common sensory symptoms.
Other sensory symptoms includes deafness, blindness and tunnel vision.

Motor symptoms associated with it are: abnormal movements, gait disturbance, weakness and paralysis.
One gait disturbance seen in this is ataxia abasia, which is a wildly ataxic, staggering gait accompanied by gross, irregular, jerky truncal movements and thrashing and waving arm movements.

**Ref:** Kaplan and Sadock's Concise Textbook of Clinical Psychiatry, 3rd Edition By Benjamin J. Sadock, Page 279

## 2093. La belle indifference is seen in

a) Conversion Reaction

b) Schizophrenia

c) Mania

d) Depression

Correct Answer - A
A i.e. Conversion reaction
*La belle indifferenceQ* is in-appropiate attitude of calm or lack of concern about one's disability. It is seen in *conversion (dissociative) disorderQ* (but not specific), physical illness etc.

## 2094. Which is the most common type of persistent delusional disorder ?

a) Delusion of persecution

b) Somatic delusion

c) Delusion of jealousy

d) Delusion of grandeur

Correct Answer - A

**Ans. A. Delusion of persecution**

- Delusion of persecution is the most common type of persistent delusional disorder.

## 2095. Dysthymia is ?

a) Chronic depression

b) Chronic mania

c) Bipolar disorder

d) Personality disorder

Correct Answer - A

**Ans. A. Chronic depression**

**Persistent depressive disorder (Dysthymia)**

- Depression may run a chronic course over years with fluctuation of mood interposed with symptom free intervals (less than 2 months).
- If symptoms persist for more than 2 years, they are referred to as persistent depressive disorder or dysthymia.

## 2096. Bipolar II disorder includes ?

a) Cyclothymic disorder

b) Dysthymia

c) Single maniac episode

d) Major depression and hypomania

Correct Answer - D
**Ans. D. Major depression and hypomania**

- Bipolar II: One or more major depressive episodes together with at least 1 hypomanic episode.

## 2097. Paraphilias are all except :

a) Bisexuality

b) Homosexuality

c) Bestiality

d) Frottuerism

Correct Answer - A
A i.e. Bisexuality
- Abnormal & unorthodox sex play by using unusal objects or parts of body are known as paraphillia eg. Sadomasochism, Transvestism, Uranism, Beastality, Fortteurism, Urolangia, Homosexuality etc.
- Bisexuality means hermaphrodite i.e. an individual with both ovary & testis & external genitals of both sexes.

## 2098. Drugs used in ADHD are -

a) Atomoxetine

b) Methylphenidate

c) Dextro-amphetamine

d) All

Correct Answer - D
Ans. is 'a' i.e., Atomoxetine; 'b' i.e., Methylphenidate; 'c' i.e., Dextro-amphetamine
**Some common stimulants used to treat ADHD include:**

- **Adderall** (**amphetamine**)
- **Ritalin** (**methylphenidate**)
- **Concerta** (**methylphenidate**)
- Focalin (dexmethylphenidate)
- Daytrana (**methylphenidate** patch)
- Metadate or **Methylin** (**methylphenidate**)
- Dexedrine or **Dextrostat** (dextroamphetamine)
- Vyvanse (lisdexamfetamine dimesylate)

## 2099. Psychotic patient on antipsychotic drugs develops torticollis within 4 days of therapy. what is the treatment?

a) Central anticholinergic

b) Peripheral anticholinergic

c) Beta blocker

d) Dantrolene

Correct Answer - A

**Ans. A. Central anticholinergic**

- This is a case of drug induced muscular dystonia, which is treated by central anticholinergic.
- Drug of choice for antipsychotic induced extrapyramidal side effects

1. Acute muscular dystonia -+ Central anticholinergic
2. Akathisia - Beta blocker
3. Parkinsonism - Central anticholinergic.
4. Neuroleptic malignant syndrome - Dantrolene
5. Tardive dyskinesia → Terabenazine (TBZ)

## 2100. ECT is contraindicated in -

a) Very ill patients

b) Raised ICT

c) Heart disease

d) Pregnancy

Correct Answer - B
Ans. is 'b' i.e., Raised ICT

## 2101. Visual analogue scale (VAS) most widely used to measure

a) Sleep

b) Sedation

c) *Pain* intensity

d) Depth of Anaesthesia

Correct Answer - C
C i.e. Pain intensity

## 2102. True about anorexia nervosa is all except ?

a) Binge eating is common

b) Unknown in male

c) Ammenorrhoea starts before severe loss of weight

d) Self-induced vomiting

Correct Answer - B

Ans. is 'b' i.e., Unknown in male

- Anorexia nervosa is less common in male, but can be seen.
- There is binge eating and self induced vomiting.

"Amenorrhea often precedes severe weight loss" – Essentials of psychiatry

**ANOREXIA NERVOSA**

- The term '`anorexia nervosa" is a misnomer as loss of appetite is a rare symptom. This disorder is characterized by self imposed dietary restrictions leading to malnutrition and severe weight loss.

**Clinical features**

- Females are far more commonly affected than males. Onset usually occurs between the age of 10-30 years, usually in mid adolescence. A deliberate and persistent restriction of food is usually the earliest presenting symptom. There is intense fear of becoming of obese, even if body becomes very thin and underweight.
- There is a body-image disturbance. The person is unable to perceive the body size accurately.
- Some patients cannot continuously control their voluntary restriction of food intake and So have eating binges. These binges usually occur secretly and often at night and are frequently followed by self-induced vomiting. Patients abuse laxatives and even diuretics to

lose weight, and ritualistic exercising, extensive cycling, walking, jogging and running are common activities.

- Patients with anorexia nervosa exhibit peculiar behavior about food. They hide food all over the house, frequently carry large quantities of candies in their pockets and purses. They try to dispose of food in their napkins or hide in their pockets, while eating meals. They cut their meat into very small pieces and spend a great deal of time rearranging the pieces on their plates.
- There is significant weight loss and patient is underweight.
- Amenorrhea is seen in almost all women and loss of libido may occur in male patients. There may be poor sexual adjustment.
- Obsessive compulsive neurosis, depression and anxiety like psychiatric illness may coexist.
- Complications of malnutrition may occur, e.g., hypoglycemia, hypothermia, low BP, bradycardia, leucopenia, endocrine changes (raised GH and Cortisol, reduced gonadotrophin), and appearance of lanugo hair.

## 2103. Main difference between anorexia nervosa and bulimia nervosa lies in:

***March 2013***

a) Symptomatology

b) Weight

c) Gender

d) Age

Correct Answer - B

Ans. B i.e. Weight

**Anorexia nervosa and bulimia**

- Both anorexia nervosa and bulimia are characterized by an overvalued drive for thinness and a disturbance in eating behavior.
- The main difference between diagnoses is that anorexia nervosa is a syndrome of self-starvation involving significant weight loss of 15 percent or more of ideal body weight, whereas patients with bulimia nervosa are, by definition, at normal weight or above.
- Bulimia is characterized by a cycle of dieting, binge-eating and compensatory purging behavior to prevent weight gain.
- Purging behavior includes vomiting, diuretic or laxative abuse.
- Excessive exercise aimed at weight loss or at preventing weight gain is common in both anorexia nervosa and in bulimia.

## 2104. Most common cause dementia in adult:

a) Alzheimer's

b) Multiinfrct

c) Pick' disease

d) Metabolic cause

Correct Answer - A
A i.e. Alzheimer's

## 2105. Following are the major symptoms of obsessive compulsive disorders ?

a) Contamination

b) Pathological doubts

c) Intrusive thoughts

d) All the above

Correct Answer - D
**Ans. is'd'i.e., All the above**
[Rl Kaplan & Saddock's |tr/e p. 605)
**OCD has four major symptom patterns :-**
**Contamination : -**

- Contamination is the most common pattern of an obsession followed by washing (washer)

**Pathological doubts : -**

- Doubts is the second most common pattern of an obsession, followed by a compulsive checking (checkers).

**Intrusive thoughts (Pure obsessions) : -**

- In this third most common pattern, there are intrusive obsessional thoughts without a compulsion.
- Such obsessions are usually r4re titious thoughts of a sexual or aggressive act that is reprehensible to the patient.

**Symmetry: -**

- This is the fourth most common pattern in which there is an obsession for symmetry or precision, which can lead to compulsion of slowness.
- Patients can literally take hours to shave their faces or to eat a meal.

**2106. Which of the following drug is not given in acute mania:**
***September 2009***

a) Lithium

b) Lamotrigine

c) Valproate

d) Olanzapine

Correct Answer - B
Ans. B: Lamotrigine
Lamotrigine is not recommended for acute mania.
It is especially useful in rapidly cycling bipolar depression.

**2107. A 3 year old boy with normal developmental milestones with delayed speech and difficulty in communication and concentration. He is not making friends. Most probable diagnosis is *?***

a) Autism

b) ADHD

c) Mental retardation

d) Specific learning disability

Correct Answer - A
Ans. is 'A' i.e., Autism
Delayed speech, difficulty in communication and concentration in a 3 year old child suggests the diagnosis of autism.
Autism is characterized by impaired social interaction and communication, and by restricted and repetitive behavior. These signs all begin before a child is three years old.
Autism affects information processing in the brain by altering how nerve cells and their synapses connect and organize
It is one of three recognized disorders in the autism spectrum, the other two being Asperger syndrome, which lacks delays in cognitive development and language, and pervasive developmental Disorder-not otherwise specified (commonly abbreviated as PDD-NOS)

## 2108. Eugene Blueler's 4As include following except ?

a) Autism

b) Affect

c) Anhedonia

d) Association

Correct Answer - C

**Ans. C. Anhedonia**

- Bleuler's 4 'As' are: (l) Ambivalence (2) Autism; (3) Affect disturbances (inappropriate affect); and (4) Association disturbances (loosening of association, thought disorder).

## 2109. Key symptom in alcohol withdrawal syndrome is:

a) Sleep disturbance

b) Visual hallucinations

c) Tremors

d) Delirium

Correct Answer - C

**Ans: C. Tremors**

**Key symptom - Tremor.**

**Withdrawal Syndromes**

| Substance | Features |
|---|---|
| **Opioid** | • Yawning°, Insomnia, Dysphoric mood<br>• Water loss from different orifices° (Lacrimation°, sweating°, diarrhea°, vomiting,<br>• Increased vitals° (BP, Pulse, RR, Temperature)°<br>• Pupillary dilation, piloerection°<br>• Hang over (MC)°<br>• Hallucinations° (usually auditory) and illusions°<br>• Insomnia°<br>• Tremors/Seizures (Alcoholic seizures/Rum fits): Classic sign |
| **Alcohol** | **Delirium tremens:**<br>• Occurs within 5 days° of complete or significant abstinence° from heavy alcohol<br>• Recovery occurs within 7 days<br>• Characteristic features are clouding of consciousness°, disorientation°, hallucinations (mostly visual and |

| | |
|---|---|
| **Cocaine** | auditory)°, illusion°, autonomic disturbances°, agitation° and insomnia°.<br>• Increased or decreased Sleep (hypersomnia° or insomnia) Psychomotor activity<br>• Vivid unpleasant dreams°<br>• Increased apetite and fatigue |

## 2110. Lithium is treatment of choice for

a) Unipolar MDP prophylaxis

b) Bipolar MDP prophylaxis

c) Schizophrenia

d) Acute mania

Correct Answer - B
B i.e. Bipolar MDP prophylaxis
**Lithium: Indications:**

- **Established indications:**
- Treatment of acute mania
- Prophylaxis of bipolar mood disorder.
- **Possible clinical indications:**
  - Treatment of the schizo-affective disorder
  - Prophylaxis of unipolar mood ilisorder
  - treatment of cyclothymia
  - Treatment if acute depression(as an adjuvant for refractory depression)
  - Treatment of chronic akoholism(in presence of significant depressive symptoms) 6 psychoactive use disorders(e'g cocaine dePendence)
  - Treatment of impulsive aggression.
  - Treatment of Keine-Levin syndrome

## 2111. Appetite for nonnutritive substances is called ?

a) Pica

b) Appreprítant

c) Bulimia

d) Bolean

Correct Answer - A

**Ans. A. Pica**

- Pica is characterized by an appetite for substances that are largely non-nutritive, such as paper, clay, metal, chalk, soil, glass, or sand.

## 2112. Not involved in Wernicke - Korsakoff syndrome:

a) Mammilary body

b) Thalamus

c) Periventricular grey matter

d) Hippocampus

Correct Answer - C
C i.e. Periventricular grey matter
Korsakoff's Psychosis (K P)

- It is the *commonest cause of organic amnestic syndrome.* It is also k/ a Wernicke - Korsakov syndrome, because it *often follows an acute neurological syndrome called Wernicke's encephalopathy* comprising delirium, ataxia, opthalmoplegia, nystagmus & peripheral neuropathy.
- It is a *potentially reversible conditionQ* caused by *thiamine deficiency most commonly associated with chronic alcohol abuse* malnutrition. But other causes of malnutrition eg. starvation, hyperemesis gravidarum, dialysis, cancer, AIDS, gastric plication or prolonged IV hyperalimentation, alone can also result in thiamine deficiency & KP.
- Neuropathological lesion caused by thiamine deficiency is usually *widespread* but most consistent changes are seen in *bilateral dorsomedial (& anterior) nucleus of thalamus, mammillary bodies, and hippocampus, in form of small vessels hyperplasia; petechial hemorrhages, astrocytic hypertrophy & degenerationQ.* It disrupts a critical circuit between hippocampus & frontal lobes. The changes are also seen in periventricular (around 3$^{r}$d ventricle), periaqueductal grey matter, cerebellum, and brain stem (midbrain, pons, medulla

fornix) as *symmetrical lesions.*
The cardinal feature is a *profound deficit of episodic memory, confabulation and lack of insight into the amnesiaQ.* It presents as :

Change in personality (frontal lobe like) such that they display *lack of initiative, interest or concern & diminished spontaneity.*
- Executive function deficits involving attention, planning, set shifting, & inferential reasoning.
- Apathy, passivity & *confabulationQ* are often prominent. There is disorientation for time, emotional blunting, & inertia.
- There is *little impairment in implicit memory and their ability to perform (complete) complex motor procedures remain intactQ.*
Typically *general intelligence, perceptual skills & language remain relatively normalQ.*

**Memory disorder**

- Profound deficit of episodic type explicit (declarative) memory 1/t loss of autobiographic information (often extending back for many years).

Severe anterograde amnesia (learning defect) for verbal & visual material with a lack of insight into the amnesia. Events are recalled immediately after they occur, but forgotten a few minutes later. Thus digit span, testing the short term memory store, is normal. *Storage is mildly impaired but retrieval & learning are severely impairedQ.*
When patients learn new material they will forget it at a normal rate, but learning the new material is extremely difficult, and in severe cases new learning is impossible. So these patients have difficult encoding & consolidating explicit memory.
- Retrograde amnesia back to the onset of illness, is as severe as anterograde loss; but the overall retrograde memory impairment (i.e. before the onset of illness) is not as severe as that of anterograde memory.

New learning & recent memory is grossly defective but retrograde (remote) memory is relatively (variably) preserved, and show a temporal gradient, with older memories better preserved. As a result these patients retain more distant memories dramatically more proficiently than they learn new material.
- Although remote memory is surprisingly intact, patients are unable

to organize them in a temporal context. So they distort the relationship between facts and *fill the remote memory gaps by confabulationQ* (a vivid & wholly fictitious account of recent activities which the patient believes to be true).

## 2113. All are features of Korsakoff syndrome except

a) Antegrade amnesia

b) Retrograde amnesia

c) Ataxia

d) Confabulation

Correct Answer - C
Ans. 'C' i.e., Ataxia
**Korsakoff syndrome**

- Korsakoff's syndrome is the chronic amnestic syndrome that follows Wernicke's encephalopathy, and the two syndromes are believed to be pathophysiologically related. Korsakoff's syndrome is characterized by severe and irreversible memory impairments and confabulation behaviour in the absence of intellectual decline or attention deficit. Important clinical features are:?

1. Memory:- The Korsakoff syndrome is characterized by both antegrade (i.e., learning) and retrograde (i.e., a memory of past events) amnesia. Antegrade amnesia is severe with a lack of insight. Retrograde amnesia is not as severe. New learning and recent memory are impaired but remote memory is relatively preserved. Although remote memory is relatively preserved, the patient is unable to organize them in a temporal context and distort the relationship between facts and fill the remote memory gaps by confabulation. There is a profound deficit of explicit (conscious or declarative) type of long term memory, with little impairment of implicit (unconscious or non-declarative) type of long term memory.
2. Personality:- Passive and malleable such that they display a lack of initiatives, interest, or concern and diminished spontaneity.

3. Other:- Perseveration, lack of motivation (amotivational syndrome), apathy, passivity.
4. General intelligence, language, and motor & perceptual skills are not impaired.

## 2114. Bad trip is seen with ?

a) Cocaine

b) Cannabis

c) LSD

d) Heroin

Correct Answer - C

**Ans. C. LSD**

- Acute panic reaction with loss of control on onself, called Bad trip, is characteristic of LSD or otJrer hallocinogens.

## 2115. Mania is characterized by:

a) Paranoid delusion

b) Loss of orientation

c) High self esteem

d) All

Correct Answer - C
C i.e. High self esteem

## 2116. Antipsychotic drug causing retinal pigment disorder is?

a) Thiaoridazine

b) Clozapine

c) Chlorpromazine

d) None of the above

Correct Answer - A

**Ans. A. Thiaoridazine**

- Blue pigmentation of skin, corneal and lenticular opacities, retinal degenration can occur with thioridazine.

## 2117. Antipsychotic drug with least extra pyramidal symptoms?

a) Pimozide

b) Thioridazone

c) Clozapine

d) Flupromazine

Correct Answer - C

**Ans. C. Clozapine**

- Antipsychotics with no extrapyramidal side effects clozapine, aripiprazole, quetiapine.
- Amongst typical antipsychotics, thioridazone has least extrapyramial side effects.

## 2118. Following is true about alcoholic dependence syndrome except -

a) No tolerance

b) Withdrawal symptoms

c) CAGE questionnaire

d) Physical dependence

Correct Answer - A

**Ans. A. No tolerance**

- Alcohol dependence has following criteria:- (i) Tolerance; (ii) Withdrawal symptoms; (iii) Taken in larger amount or longer duration; (iv) Persistent craving (desire) to take alcohol; (v) A great deal of time spent to obtain alcohol or to use it; (vi) Neglect of other activities (social, occupational); and (vii) Continued use despite clear evidence of overtly harmful consequences.
- The CAGE questionnaire is a tool used to assess individuals for potential alcohol problems, including dependence.
- Alcohol produces both physical as well as psychological dependence.

## 2119. DSM IV criterion for depression is?

a) 1 week

b) 2 weeks

c) 3 weeks

d) 4 weeks

Correct Answer - B

**Ans. B. 2 weeks**

- For the diagnosis of minor depression 2-4 and for major depression > 5 DSM IV symptoms are required for at least for a two week period.

## 2120. The clinical effects of the antidepressant drugs is mainly based on ?

a) Change in neurotransmitter receptor sensitivity

b) Decreased level of neurotransmitters

c) Change in efficacy of neurotransmitters

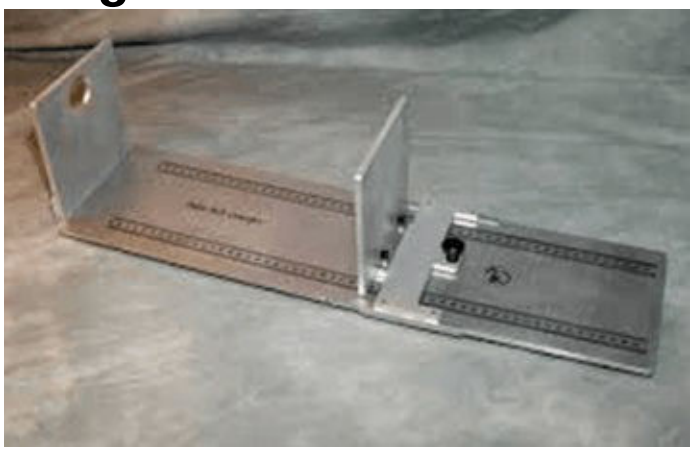
d) None of the above

Correct Answer - A

**Ans. A. Change in neurotransmitter receptor sensitivity**

- Temporal correlation of clinical effects with changes in receptor sensitivity has given rise to hypothesis that changes in neurotransmitter receptor sensitivity may actually mediate the clinical effects of antidepressant drugs.
- These clinical effects include not only antidepressant and anxiolytic actions but also the development of tolerance to the acute side effects of antidepressant drugs.

## 2121. Identify the instrument depicted in the image



a) Osteometric board

b) Shakir's board

c) Radiometric board

d) Thermometric bord

Correct Answer - A

**Ans. is 'a' i.e.,Osteometric board *[Ref Narayan Reddy 30$^{th}$ie p. 116]***

- It is Hepburn osteometric Board for measurement of length of long bones.
- Used  For measurement of Bone length of large bones like TIBIA & FEMUR.

**2122. A child with pneumonia has following chest X-ray. Most likely causative organism is -**

a) Str. pneumoniae

b) Staph aureus

c) Str. pyogenes

d) Listeria

Correct Answer - B

**Answer- B. Staph aureus**

The given chest X-ray is showing large pneumatocele in right lung —> characteristic of staph aureus pneumonia.

## 2123. Chest x-ray of a child presenting with acute breathlessness. Diagnosis

a) Pneumothorax

b) Penuma ocele

c) Normal

d) None of above

Correct Answer - A

**Answer- A. Pneumothorax**

The above film shows a right sided tension pneumothorax with right sided lucency and leftward mediastinal shift. This is a medical emergency. And require immediate intercostals drainage.

**2124. 1 day old male baby delivered by LSCS had swelling over back in midline.**

a) Iron

b) Folic acid

c) Thiamine

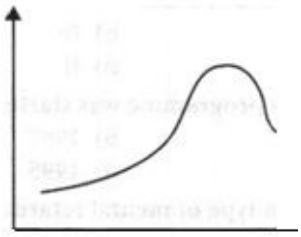
d) Vit A

Correct Answer - B

**Answer- B. Folic acid**

The figure is showing meningocele (a neural tube defect). Neural tube defect can be prevented by folic acid supplementation.

## 2125. Following figure denotes -



a) Standard distribution

b) Negatively skewed

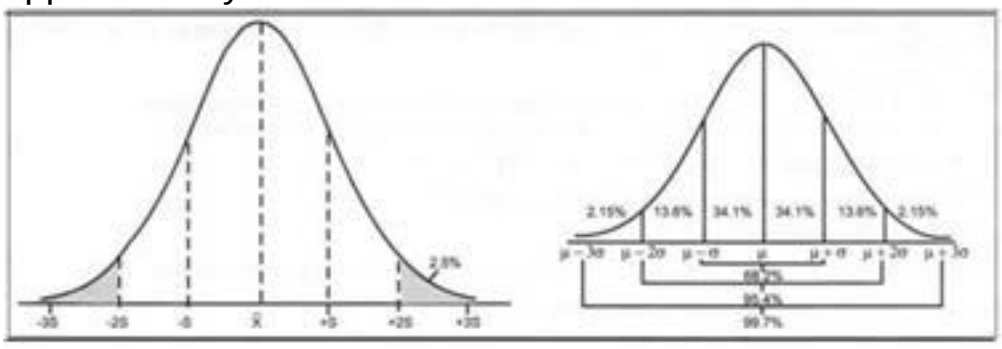
c) Positively skewed

d) Right handed

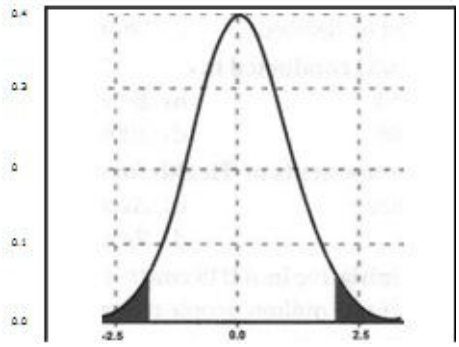
Correct Answer - C

**Ans. is 'c' i.e., 5%**

Shaded area represents the region beyond 2 standard deviations of the normal distribution curve; thus represents an area of approximately 5%.



## 2126. What percentage of the normal distribution curve is represented by the shaded area?




a) 1%

b) 3%

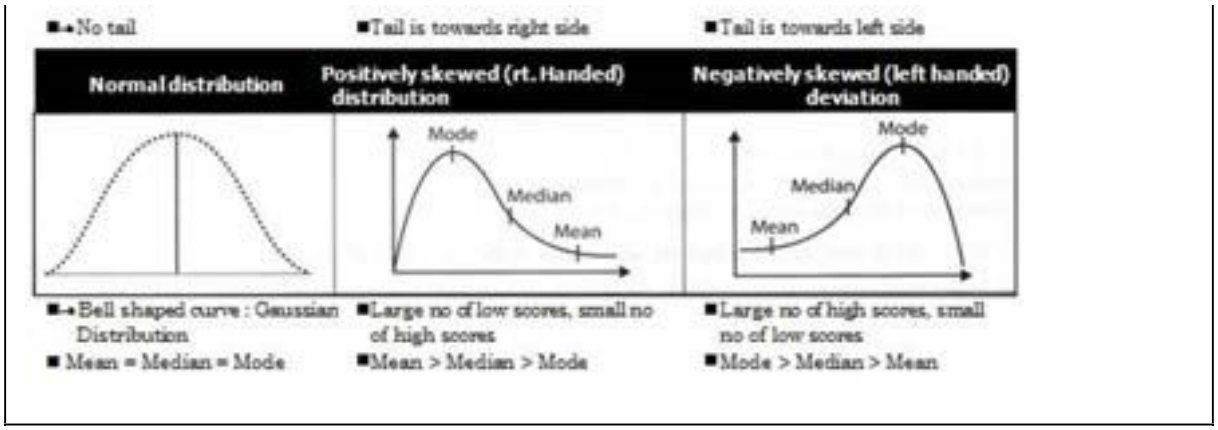
c) 5%

d) 7%

Correct Answer - C

**Ans. is 'c' i.e., 5%** ***[Rep High yield biostatistics*** **p.** ***11, 12]***

| Normal distribution | Positively skewed (rt. Handed)Negatively skewed (left handed) distribution deviation |
|---|---|

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