GUJCET 2021 Question Paper

Gujarat Common Entrance Exam (GUJCET)

GUJCET-PCE-2021

Test Booklet No. 1501789 Test Booklet Set No. **15**

This booklet contains 32 pages.

DO NOT open this Test Booklet until you are asked to do so.

Important Instructions :

1) The Physics and Chemistry test consists of 80 questions. Each question carries 1 mark. For each correct response, the candidate will get 1 mark. For each incorrect response ¼ mark will be deducted. The maximum marks are 80.
2) This Test is of **2 hours** duration.
3) Use **Black Ball Point Pen only** for writing particulars on OMR Answer Sheet and marking answers by darkening the circle '●'.
4) Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5) **On completion of the test, the candidate must handover the Answer Sheet to the Invigilator in the Room / Hall. The candidates are allowed to take away this Test Booklet with them.**
6) The Set No. for this Booklet is 15 . Make sure that the Set No. printed on the Answer Sheet is the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7) The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet.
8) Do not write your Seat No. anywhere else, except in the specified space in the Test Booklet / Answer Sheet.
9) Use of White fluid for correction is not permissible on the Answer Sheet.
10) Each candidate must show on demand his / her Admission Card to the Invigilator.
11) No candidate, without special permission of the Superintendent or Invigilator, should leave his / her seat.
12) Use of Simple (Manual) Calculator is permissible.
13) The candidate should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and must sign the Attendance Sheet (Patrak - 01). Cases where a candidate has **not** signed the Attendance Sheet (Patrak - 01) will be deemed not to have handed over the Answer Sheet and will be dealt with as an unfair means case.
14) The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
15) No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
16) The candidates will write the Correct Test Booklet Set No. as given in the Test Booklet / Answer Sheet in the Attendance Sheet. (Patrak - 01)

PHYSICS

1) For LCR ac series circuits, L = 25 mH, R = 3Ω, C = 62.5 μF. What is the frequency of the sources at which resonance occurs?

(A) 127.39 Hz
(B) 35.40 Hz
(C) 100 Hz
(D) 21 Hz

2) For a series LCR circuit with L = 2 H, C = 18 μF and R = 10 Ω. What is the value Q-factor of this circuit?

(A) 22.22
(B) 55.55
(C) 44.44
(D) 33.33

3) What is Range of Radio Frequency Band of FM (Frequency Modulated Band)?

(A) 500 kHz to 1000 MHz
(B) 54 MHz to 890 MHz
(C) 530 kHz to 1710 kHz
(D) 88 MHz to 108 MHz

4) A plane electromagnetic wave of frequency 25 MHz travels in free space along the X-direction. At a particular point in space and time, where $\vec{B}=2.1\times10^{-8}\,\hat{k}T$ then find $\vec{E}$ at this point?

(A) $-2.1\,\hat{j}\frac{V}{m}$
(B) $6.3\,\hat{j}\frac{V}{m}$
(C) $4.2\,\hat{j}\frac{V}{m}$
(D) $-3.2\,\hat{j}\frac{V}{m}$

(Space for Rough Work)

5) Glass prism having a refractive index μ, placed in a air, for that angle of minimum deviation of prism is same as angle of prism. Then what is value of angle of prism?

(A) $2\cos^{-1}\left(\mu/2\right)$ (B) $2\cos^{-1}(\mu)$

(C) $\cos^{-1}\left(\mu/2\right)$ (D) $\cos^{-1}(\mu)$

6) The radii of curvature of the faces of a double convex lens are 10 cm and 15 cm. Its focal length is 12 cm. What is the refractive index of material of lens?

(A) 1.33 (B) 1.62

(C) 1.50 (D) 2.42

7) Find equivalent focal length due to combination of two convex lens are in contact having a focal length both of them 30 cm.

(A) 15 cm (B) 30 cm

(C) 20 cm (D) 40 cm

8) A tank is filled with water to a height of 16 cm. Find the apparent depth of a needle lying at the bottom of the tank is measured by a microscope. Refractive index of water (μ_w) is $4/3$.

(A) 9.4 cm (B) 12.0 cm

(C) 10.6 cm (D) 8.0 cm

(Space for Rough Work)

$\mu = 4/3$

9) Estimate the distance for which ray optics is good approximation for an aperture of 5 mm and wavelength 500 nm?

(A) 40 m (B) 30 m

(C) 50 m (D) 20 m

10) The wavelength of light 500 nm is used in a Young's double-slit experiment. The distance between the slits and screen is 100 cm and the slits are separated by 1 mm. Then find distance between fifth (5^{th}) and third (3^{rd}) bright fringes.

(A) 1 mm (B) 3 mm

(C) 2 mm (D) 4 mm

11) Which of those metal having least work function (ϕ_0) among them?

(A) Mo (B) Pb

(C) Ca (D) Na

12) What is the de-Broglie wavelength associated with an electron, accelerated through a potential difference of 64 volts?
[h = 6.63×10^{-34} J.s]

(A) 1.23 Å (B) 1.87 Å

(C) 1.53 Å (D) 1.98 Å

(Space for Rough Work)

13) In photoelectrical effect, that the graph of stopping potential (V_0) versus frequency ν is straight line. What will be the slope of this straight line?

(A) $\frac{e}{h}$ (B) V_0/e

(C) h/e (D) $\frac{\nu}{h}$

14) What is the shortest wavelength present in the Balmer series of spectral line? [Where R is Rydberg constant]

(A) $\frac{1}{R}$ (B) $\frac{3}{R}$

(C) $\frac{2}{R}$ (D) $\frac{4}{R}$

15) The radius of the innermost electron orbit of a hydrogen atom is 5.3×10^{-11} m. What are the radii of the $n = 4$ orbit?

(A) 2.12×10^{-10} m

(B) 8.48×10^{-10} m

(C) 4.24×10^{-10} m

(D) 10.6×10^{-10} m

(Space for Rough Work)

16) The ground state energy of hydrogen atom is –13.6 eV. What will be the kinetic energies of the electron?

(A) 13.6 eV
(B) 27.2 eV
(C) –13.6 eV
(D) –27.2 eV

17) How many neutrons will produced for a given following nuclear fission reaction?

$${}^{1}_{0}n + {}^{235}_{92}U \rightarrow {}^{236}_{92}U \rightarrow {}^{144}_{56}Ba + {}^{89}_{36}Kr + (?)\,{}^{1}_{0}n$$

(A) 1
(B) 3
(C) 2
(D) 4

18) Half-life time of a radioactive element is 16 years. How much time will taken to reduce its activity 16 part?

(A) 8 years
(B) 32 years
(C) 16 years
(D) 64 years

19) What should be the ratio of neutron and proton for stability of heavy nucleus?

(A) 1 : 1
(B) 3 : 2
(C) 2 : 1
(D) 2 : 3

(Space for Rough Work)

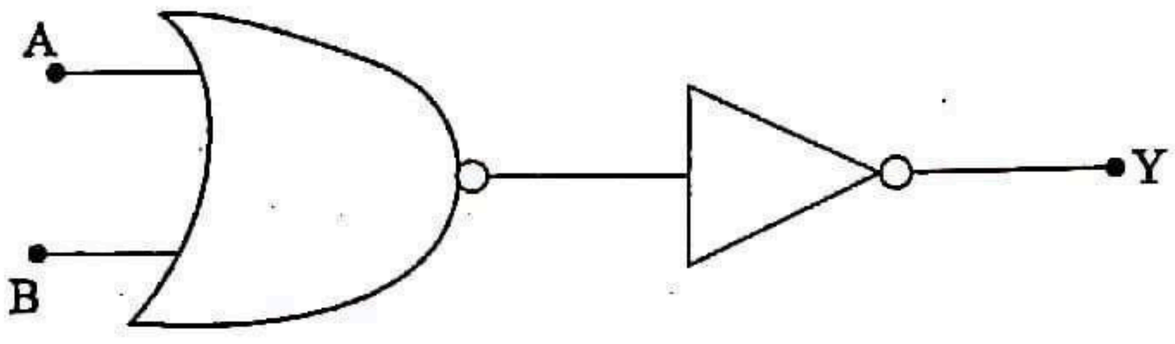
20) What is energy band gap (E_g) for p-type and n-type semiconductor use to form a LED to produce a red light colour?

(A) 3 eV
(B) 1.9 eV
(C) 1.8 eV
(D) 1.4 eV

21) In full wave rectification Input Frequency 60 Hz. What will the output frequency for that?

(A) 50 Hz
(B) 100 Hz
(C) 60 Hz
(D) 120 Hz

22) In a given following electronic logic circuit it behaves at which logic operation.



(A) AND gate
(B) NOT gate
(C) OR gate
(D) NAND gate

(Space for Rough Work)

23) Electrical field intensity due to an electric dipole on it's axis at distance $x(x >> a)$ and on the equatorial at distance $y(y >> a)$ are same. What is the ratio of x and y?

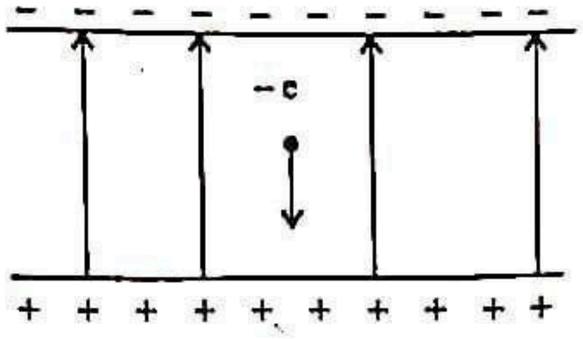
(A) $\sqrt[3]{2} : 1$

(B) $\sqrt{2} : 1$

(C) $1 : \sqrt[3]{2}$

(D) $1 : 2$

24) As shown in the following fig. an electron falls through a distance of 1.5 cm in a uniform electric field of magnitude $2.0 \times 10^4\ NC^{-1}$. Find the acceleration of the electron due to the electric field. [$e = 1.6 \times 10^{-19}$ C, $m_e = 9.1 \times 10^{-31}$ kg]



(A) $2.90 \times 10^{19}\ ms^{-2}$

(B) $1.67 \times 10^{27}\ ms^{-2}$

(C) $3.52 \times 10^{15}\ ms^{-2}$

(D) $6.62 \times 10^{34}\ ms^{-2}$

25) Two large, thin metal plates are parallel and close to each other. On their inner faces, the plates have surface charge densities of same signs and of magnitude $17.7 \times 10^{-22}\ C/m^2$. What is E in the outer region of the second plate?

(A) $4 \times 10^{-10}\ NC^{-1}$

(B) $2 \times 10^{-10}\ NC^{-1}$

(C) $1 \times 10^{-10}\ NC^{-1}$

(D) Zero

(Space for Rough Work)

26) Which of the following option gives the Dimensional Formula of Electrical Potential?

(A) $[M^{-1} L^{2} T^{-3} A^{1}]$

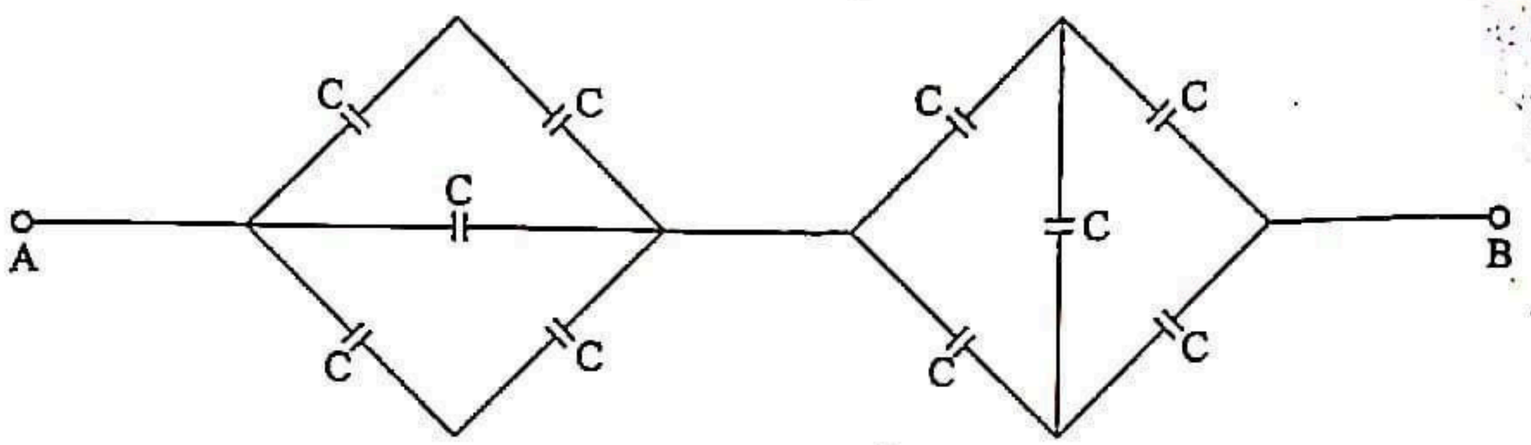
(B) $[M^{0} L^{3} T^{3} A^{-1}]$

(C) $[M^{-1} L^{-2} T^{-4} A^{2}]$

(D) $[M^{1} L^{2} T^{-3} A^{-1}]$

27) Find the equivalent capacitance between two points A & B, for given figure (electric circuit)

[Capacitance of each capacitor is $C = 3\mu F$]



(A) 1 μF

(B) 3 μF

(C) 2 μF

(D) 4 μF

28) Which of the following option is the pair of polar molecules?

(A) $[H_2O, O_2]$

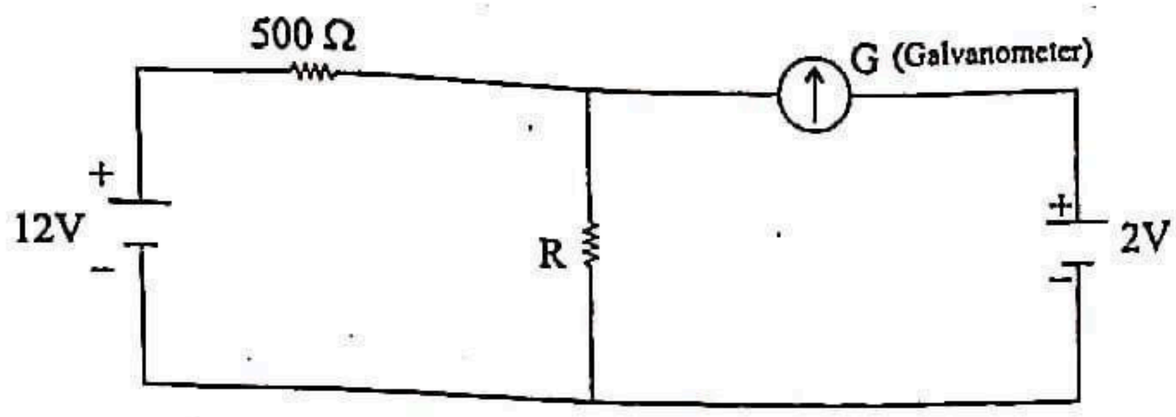
(B) $[HCl, H_2]$

(C) $[HCl, H_2O]$

(D) $[H_2, O_2]$

(Space for Rough Work)

29) For the which value of Resistance R = _____ when galvanometer shows zero deflection for following below electrical circuit.



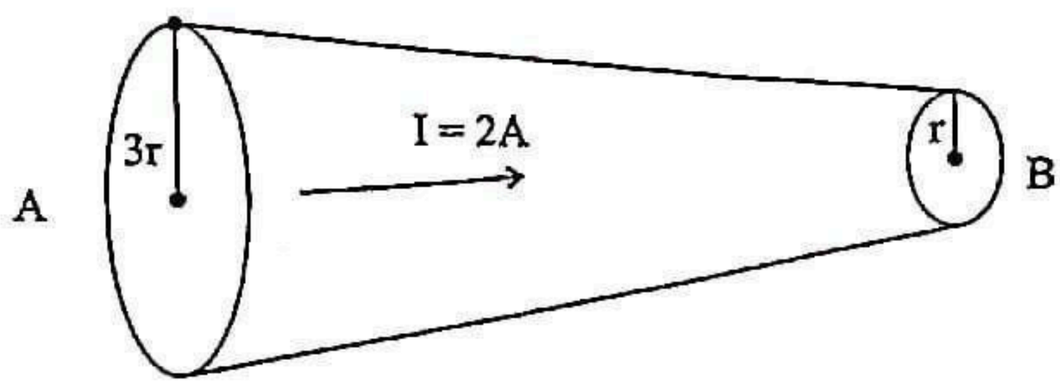
(A) 100 Ω

(B) 300 Ω

(C) 200 Ω

(D) 400 Ω

30) As following figure 2A current passing through a conducting wire, radius of cross-sectional of wire at point A is $3r$ and point B is r respectively. Then find the ratio of drift velocity at point A & B.



(A) $\frac{1}{3}$

(B) 3

(C) $\frac{1}{9}$

(D) 9

(Space for Rough Work)

31) In a potentiometer arrangement, a cell of emf 1.5 V gives a Balance point at 150 cm length of the wire. If the cell is replaced by another cell and the balance point shift to 210 cm, what is the emf of the second cell?

(A) 3.2 V
(B) 1.2 V
(C) 4.4 V
(D) 2.1 V

32) Circular loop having radius r, carrying current I, produces magnetic field at the centre loop is B. What will be the magnetic dipole moment of this loop?

(A) $\frac{4\pi Br^3}{\mu_0}$
(B) $\frac{2\pi Br^3}{\mu_0}$
(C) $\frac{\pi Br^3}{\mu_0}$
(D) $\frac{\pi Br^3}{4\mu_0}$

33) The horizontal component of the earth's magnetic field at a certain place is 3.0×10^{-5} T and the direction of the field is from the geographic south to the geographic north. A very long straight conductor is carrying a steady current of 2A. What is the force per unit length on it when it is placed on a horizontal table and the direction of the current is east to west?

(A) 3×10^{-5} N/m
(B) 9×10^{-5} N/m
(C) 6×10^{-5} N/m
(D) 2×10^{-5} N/m

(Space for Rough Work)

34) A solenoid of length 0.5 m has a radius of 1 cm and is made up of 1000 turns. It carries a current of 10A. What is the magnitude of the magnetic field inside the solenoid?

(A) 6.28×10^{-3} T
(B) 2.51×10^{-2} T
(C) 1.71×10^{-2} T
(D) 7.23×10^{-3} T

35) At certain place on the surface of the earth, horizontal component of earth's magnetic field is same as vertical component of earth magnetic field, then what will be angle of dip at that place?

(A) 30°
(B) 60°
(C) 45°
(D) 90°

36) What is the magnitude of the equatorial fields due to a bar magnet of length 5.0 cm at a distance 75 cm from its mid point? The magnetic moment of the bar magnet is $0.75\ Am^2$.

(A) 3.2×10^{-7} T
(B) 1.78×10^{-7} T
(C) 6.4×10^{-7} T
(D) 3.56×10^{-7} T

37) For a long current carrying solenoid having inside magnetic field is 0.6 T. Then find the magnetic energy per unit volume is _____.

(A) 1.43×10^5 J/m^3
(B) 5.23×10^4 J/m^3
(C) 2.86×10^4 J/m^3
(D) Zero

(Space for Rough Work)

38) The self inductance L of a solenoid of length *l* and area of cross-section A increase _____. (Here, with fixed number of turns N).

(A) *l* and A increase

(B) *l* increases and A decreases

(C) *l* decreases and A increases

(D) Both *l* and A decrease

39) A pair of adjacent coils has a mutual inductance of 1.5 H. If the current in one coil changes from 0 to 20 A in 0.5 sec. what is the change of flux linkage with the other coil?

(A) 15 Wb

(B) 45 Wb

(C) 30 Wb

(D) 60 Wb

40) A 50 μF capacitor is connected to a 110V, 60 Hz ac supply. Determine the rms value of the current in the circuit.

(A) 5.2A

(B) 2.5A

(C) 3.8A

(D) 2.1A

(Space for Rough Work)

C = 50 μF
V = 110 V
f = 60 Hz

CHEMISTRY

41) Which halogen element gives Halous acid type of oxoacid?

(A) F
(B) Br
(C) Cl
(D) I

42) Which is used for manufacture of steel?

(A) Dihydrogen
(B) Dinitrogen
(C) Dioxygen
(D) Dichlorine

43) If atomic number of element is 26, then magnetic moment is _____ BM of its divalent aqueous ion?

(A) 1.73
(B) 3.87
(C) 2.83
(D) 4.90

44) Which product is obtained during reaction of MnO_4^- with I^- in faintly alkaline condition?

(A) I_2
(B) IO_3^-
(C) IO^-
(D) IO_4^-

(Space for Rough Work)

$\sqrt{(2c12)}$

45) Which is not act as ligand?

(A) NO

(B) $H_2NCH_2CH_2NH_2$

(C) NH_4^+

(D) CO

46) Which is correct formula for pentaaminecarbonatocobalt (III) chloride coordination compound?

(A) $[Co(NH_3)_5(CO_3)]Cl$

(B) $[Co(NH_3)_5(CO_2)]Cl$

(C) $[Co(NH_3)_5(CO_3)]Cl_2$

(D) $[Co(NH_2)_5(CO_3)]Cl$

47) Which type of Isomerism in isomers $[Co(NH_3)_5(SO_4)]Br$ and $[Co(NH_3)_5Br]SO_4$?

(A) Linkage

(B) Ionisation

(C) Coordination

(D) Solvate

48) $CH_3CH=CHC(Cl)(CH_3)_2$ is which type of halide based on position of –Cl?

(A) Allylic

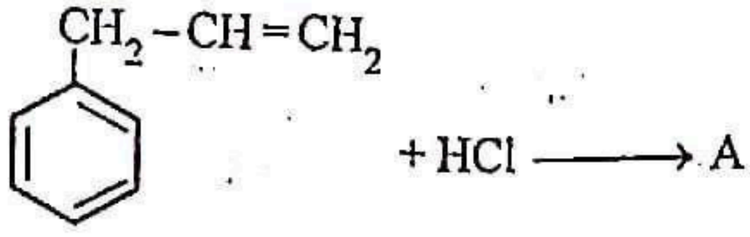
(B) Secondary

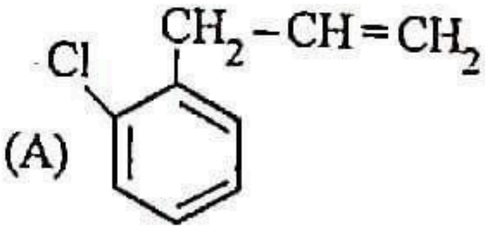
(C) Vinylic

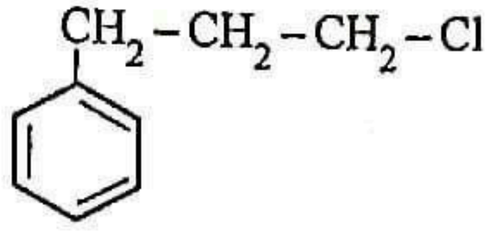
(D) Aryl

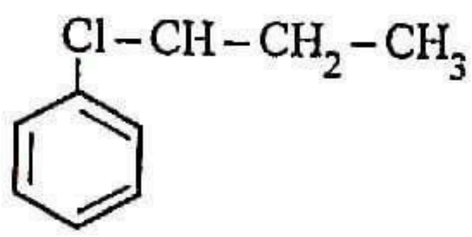
(Space for Rough Work)

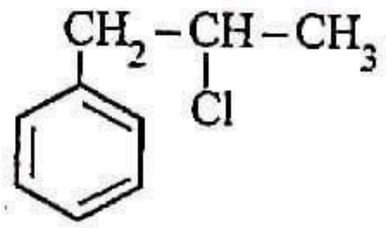
49) What is A in following reaction?



(A) 

(B) 

(C) 

(D) 

50) Which would undergo S_N1 reaction faster from following?

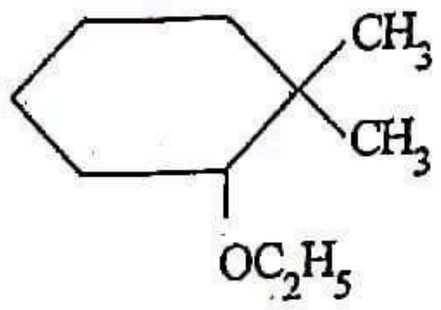
(A) Chloromethane

(B) 2-bromo-3-methylbutane

(C) 2-chloro-3-methylbutane

(D) 2-bromo-2-methylpropane

(Space for Rough Work)

51) From following, IUPAC name of compound  is?

(A) 2-ethoxy-1, 1-dimethyl cyclohexane

(B) 5-ethoxy-6, 6-dimethyl cyclohexane

(C) 1-ethoxy-2, 2-dimethyl cyclohexane

(D) 1-ethoxy-6, 6-dimethyl cyclohexane

52) Which Grignard reagent gives 2-methylpropan-1-ol with reaction with methanal?

(A) $CH_3-CH_2-CH_2-Mg-X$

(B) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-Mg-X$

(C) $CH_3-CH=CH-Mg-X$

(D) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-Mg-X$

53) Which compound having maximum value of pKa from following?

(A) $o-O_2N-C_6H_4-OH$ (B) $p-O_2N-C_6H_4-OH$

(C) $m-O_2N-C_6H_4-OH$ (D) C_6H_5OH

(Space for Rough Work)

54) Which reagent is used to convert Allyl alcohol to propenal?

(A) PCC

(B) O_3/H_2O - Zn (Powder)

(C) DIBAL-H

(D) All above

55) Which compound give Cannizzaro reaction from following?

(A) CH_3CHO

(B) CH_2ClCHO

(C) CCl_3CHO

(D) $CHCl_2CHO$

56) Which compound having maximum acidic strength of the following?

(A) 4-methoxy benzoic acid

(B) 2-methoxy benzoic acid

(C) Benzoic acid

(D) 4-nitrobenzoic acid

57) 2° - Amine is obtained by reduction of which compound?

(A) Nitrile

(B) Nitro

(C) Isonitrile

(D) Amide

(Space for Rough Work)

58) Hinsberg's reagent do not react with which amine?

(A) Only 1° - amine

(B) Only 3° - amine

(C) Only 2° - amine

(D) 1° and 2° - amine

59) Which product is obtained by nitration of aniline?

(A) o-nitroaniline

(B) m-nitroaniline

(C) p-nitroaniline

(D) All above

60) Which reaction prove that all the six carbon atoms are linked in a straight chain in glucose?

(A) Heat with HI

(B) Reaction with Br_2

(C) Reaction with NH_2OH

(D) Reaction with HCN

(Space for Rough Work)

61) Which α-amino acid is not optical isomer?

(A) Alanine (B) Glycine

(C) Lysine (D) Leucine

62) In DNA, which bases is not present of following?

(A) Thymine

(B) Guanine

(C) Uracil

(D) Adenine

63) Which is network solid from following?

(A) SiC (B) $I_{2(s)}$

(C) $CO_{2(s)}$ (D) $H_2O_{(s)}$

64) The edge lengths of the unit cells in terms of the radius r of spheres constitutin fcc, bcc and simple cubic unit cell are respectively _____.

(A) $\frac{4r}{\sqrt{3}}, 2\sqrt{2}r, 2r$ (B) $2r, 2\sqrt{2}r, \frac{4r}{\sqrt{3}}$

(C) $2r, \frac{4r}{\sqrt{3}}, 2\sqrt{2}r$ (D) $2\sqrt{2}r, \frac{4r}{\sqrt{3}}, 2r$

(Space for Rough Work)

65) Atoms of element X form hcp lattice and those of the element Y occupy 75% of tetrahedral voids. What is the formula of the compound formed by elements X and Y?

(A) X_4Y_3 (B) X_3Y_4

(C) X_2Y_3 (D) X_3Y_2

66) Which of the following aqueous solutions should have the minimum boiling point?

(A) 0.1 M Urea

(B) 0.1 M K_2SO_4

(C) 0.1 M NaCl

(D) 0.1 M $FeCl_3$

67) 3.0 gram ethanoic acid in 50 gram benzene having _____ molality?

(Atomic weights : H = 1, C = 12, O = 16).

(A) 0.1 (B) 1.0

(C) 0.6 (D) 0.06

68) Which method is used to remove salts from sea water?

(A) Hydraulic washing

(B) Leaching

(C) Reverse osmosis

(D) Froth Floatation

(Space for Rough Work)

69) Which products are obtained during electrolysis of aqueous solution of sodium chloride?

(A) $NaOH, O_2$ and H_2

(B) NaOH, Na and H_2

(C) NaOH, Cl_2 and H_2

(D) Na, Cl_2 and H_2

70) Using the data given below find out the strongest reducing agent?

$E^{o}_{Cr_2O_7^{2-}/Cr^{3+}} = 1.33\,V$ $\quad$ $E^{o}_{Cl_2/Cl^-} = 1.36\,V$

$E^{o}_{MnO_4^-/Mn^{2+}} = 1.51\,V$ $\quad$ $E^{o}_{Cr^{3+}/Cr} = -0.74\,V$

(A) Cl^- $\quad$ (B) Cr^{3+}

(C) Cr $\quad$ (D) Mn^{2+}

71) Which is symbolic representation for following cell reaction, $Mg_{(s)} + Cl_{2(g)} \rightarrow Mg^{2+}_{(aq)} + 2Cl^-_{(aq)}$.

(A) $Mg\,|Mg^{2+}_{(aq)}\,(1M)||Cl^-_{(aq)}\,(1M)|Cl_{2(g)}(1bar)|Pt$

(B) $Pt\,|Cl^-_{(aq)}(1M)|Cl_{2(g)}\,(1bar)||\,Mg^{2+}_{(aq)}(1M)|Mg$

(C) $Mg\,|Mg^{2+}_{(aq)}\,(1M)||Cl_{2\,(g)}\,(1bar)|Cl^-_{(aq)}(1M)|Pt$

(D) $Pt\,|Cl_{2(g)}\,(1bar)|Cl^-_{(aq)}(1M)||Mg^{2+}_{(aq)}(1M)|Mg$

(Space for Rough Work)

Nack + H_2O

NaOH + Cl_2 + H_2

72) For a reaction, $K = 4.5 \times 10^{-4}\ L\ mol^{-1}\ s^{-1}$. What is order of reaction?

(A) Zero
(B) Second
(C) First
(D) Third

73) For first order reaction, the value of slope for graph of $\log \frac{[R]_0}{[R]} \rightarrow t$ is _____.

(A) $\frac{K}{2.303}$
(B) $\frac{2.303}{K}$
(C) $-K$
(D) $-\frac{K}{2.303}$

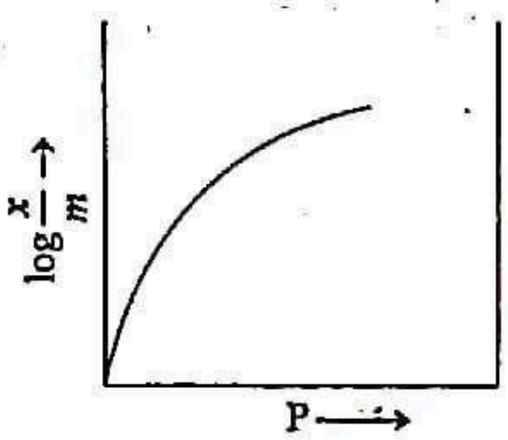
74) The rate constant for a first order reaction is $60\ s^{-1}$. How much second will it take to reduce the initial concentration of the reactant to its $\frac{1}{16}$th value?

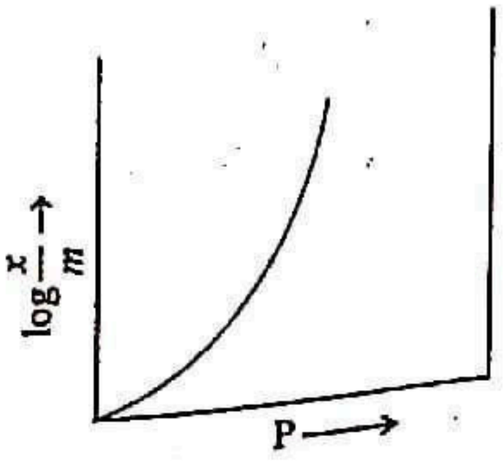
(A) 2.3×10^{-2}
(B) 9.5×10^{-2}
(C) 4.6×10^{-2}
(D) 6.9×10^{-2}

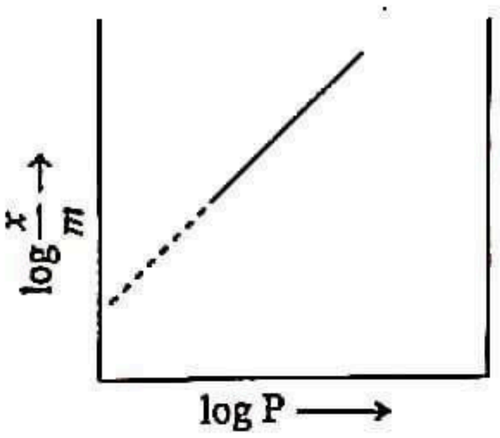
(Space for Rough Work)

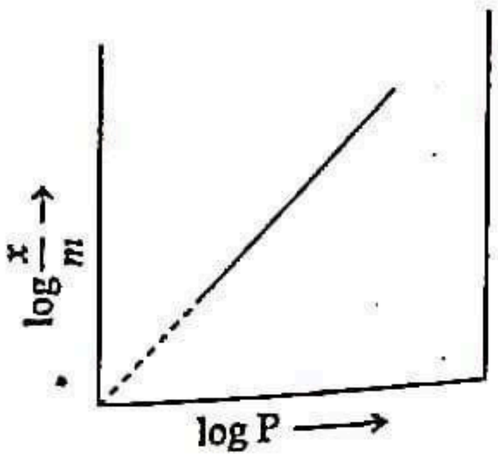
$k = 60\ s^{-1}$

75) Which is Freundlich Adsorption isotherm?

(A) 

(B) 

(C) 

(D) 

76) Which method is used to prepare colloids?

$As_2O_3 + 3H_2S \rightarrow As_2S_3(sol) + 3H_2O$

(A) Oxidation

(B) Hydrolysis

(C) Reduction

(D) Double decomposition

(Space for Rough Work)

77) Which of the following ions will have maximum flocculating power for coagulation of As_2S_3 sol?

(A) Na^+ (B) Al^{3+}

(C) Mg^{2+} (D) Ba^{2+}

78) Which metals are purified by vapour phase refining for following?

(A) Ni, Fe (B) Zr, Sn

(C) Ag, Ni (D) Ni, Zr

79) Copper matte is a mixture of which substances?

(A) $Cu_2O + FeS$ (B) $Cu_2S + FeO$

(C) $Cu_2S + FeS$ (D) $FeO + CuO$

80) Very pure dinitrogen can be obtained by the thermal decomposition of which substance?

(A) Sodium azide

(B) Ammonium dichromate

(C) Ammonium nitrite

(D) Barium nitrite

(Space for Rough Work)

GUJCET Physics & Chemistry

2021 Paper Answer Key (Eng)

CHEMISTRY (ENG) SET - 15

Question No.	Answer	Question No.	Answer
41	C	61	B
42	B	62	C
43	D	63	A
44	B	64	D
45	C	65	C
46	A	66	*
47	B	67	B
48	A	68	C
49	D	69	C
50	D	70	B
51	A	71	A
52	B	72	B
53	D	73	A
54	A	74	C
55	C	75	C
56	D	76	D
57	*	77	B
58	B	78	D
59	D	79	C
60	A	80	A

GUJCET Physics & Chemistry

2021 Paper Answer Key (Eng)

PHYSICS (ENG) SET - 15

Question No.	Answer	Question No.	Answer
1	A	21	D
2	D	22	C
3	D	23	A
4	B	24	C
5	A	25	B
6	C	26	D
7	A	27	C
8	B	28	C
9	C	29	A
10	A	30	C
11	D	31	D
12	C	32	B
13	C	33	C
14	D	34	B
15	B	35	C
16	A	36	B
17	B	37	A
18	D	38	C
19	B	39	C
20	B	40	D

GUJCET-ME-2021

Test Booklet No. _____ Test Booklet Set No. **15**

This booklet contains 16 pages.

DO NOT open this Test Booklet until you are asked to do so.

Important Instructions :

1) The Mathematics test consists of 40 questions. Each question carries 1 mark. For each correct response, the candidate will get 1 mark. For each incorrect response, ¼ mark will be deducted. The maximum marks are 40.
2) This Test is of **1 hour** duration.
3) Use **Black Ball Point Pen only** for writing particulars on OMR Answer Sheet and marking answers by darkening the circle '●'.
4) Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5) **On completion of the test, the candidate must handover the Answer Sheet to the Invigilator in the Room / Hall. The candidates are allowed to take away this Test Booklet with them.**
6) The Set No. for this Booklet is 15 . Make sure that the Set No. printed on the Answer Sheet is the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7) The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet.
8) Do not write your Seat No. anywhere else, except in the specified space in the Test Booklet / Answer Sheet.
9) Use of White fluid for correction is not permissible on the Answer Sheet.
10) Each candidate must show on demand his / her Admission Card to the Invigilator.
11) No candidate, without special permission of the Superintendent or Invigilator, should leave his / her seat.
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16) The candidates will write the Correct Test Booklet Set No. as given in the Test Booklet / Answer Sheet in the Attendance Sheet. (Patrak - 01)

Candidate's Name : .....

Exam. Seat No. (in figures) ..... (in words) .....

Name of Exam. Centre : .....Exam. Centre No.: .....

Test Booklet Set No. : ..... Test Booklet No. : .....

Candidate's Sign. ..... *Block Supervisor Sign.* .....

PSO (15)

MATHEMATICS

1) $\int \frac{x^5+1}{x+1} dx =$ _____ + C

(A) $\sum_{n=1}^{4}\left((-1)^{n+1} \cdot \frac{x^n}{n}\right)$

(B) $\sum_{n=1}^{5}\left((-1)^{n+1} \cdot \frac{x^n}{n}\right)$

(C) $\sum_{n=1}^{4}\left((-1)^{n} \cdot \frac{x^n}{n}\right)$

(D) $\sum_{n=1}^{5}\left((-1)^{n} \cdot \frac{x^n}{n}\right)$

2) $\int_{-1}^{1} \cot^{-1} x \, dx =$ _____

(A) 0

(B) $\frac{\pi}{2}$

(C) π

(D) 2π

$\int_0^1 \cot^{-1} x \, dx$

$\int_0^1 \tan^{-1}(\pi_1 - x) \, d$

$\int_0^1 \tan \pi_1 - \int_0^1$

0

3) $\int \tan\left(\frac{\pi}{4} - x\right) \cdot (2 + 2\sin 2x) dx =$ _____ + C.

(A) $\sin 2x$

(B) $-\sin 2x$

(C) $2\sin 2x$

(D) $-2\sin 2x$

(Space for Rough

4) $\int_0^1 \frac{dx}{(3x+2)+\sqrt{3x+2}} =$ _____

(A) $-\frac{2}{3}\log\left|\frac{\sqrt{5}+1}{\sqrt{2}+1}\right|$

(B) $\frac{2}{3}\log\left|\frac{\sqrt{5}+1}{\sqrt{2}+1}\right|$

(C) $2\log\left|\sqrt{5}+1\right|$

(D) $\frac{2}{3}\log\left|\sqrt{5}+1\right|$

5) If $\int \frac{\cos 3x}{\sin x}dx = p\cos 2x + q\log\left|\sin x\right| + C$, then $p+q =$ _____

(A) 0

(B) $\frac{3}{2}$

(C) 2

(D) $\frac{1}{2}$

6) $\int e^x\left(2021+\tan x+\tan^2 x\right)dx =$ _____ + C.

(A) $(2021+\tan x)e^x$

(B) $(2020+\tan x)e^x$

(C) $(2020+\tan x)$

(D) $(2000+\tan x)e^x$

7) If area bounded by the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is $\frac{\pi}{6}$, then equation of ellipse is _____

(A) $\frac{x^2}{4}+\frac{y^2}{9}=1$

(B) $4x^2+9y^2=1$

(C) $\frac{x^2}{36}+y^2=1$

(D) $x^2+y^2=36$

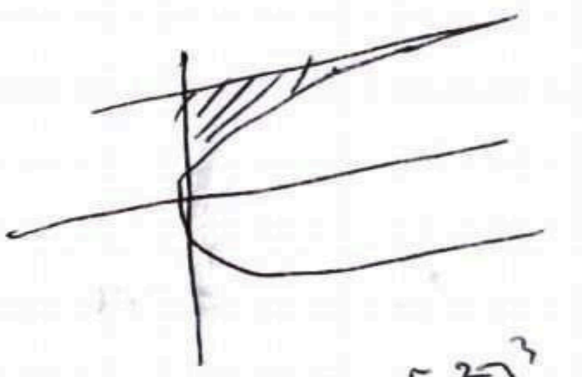
8) Area of the region bounded by the curve $y^2=4x$, Y-axis and the line $y=3$ is _____

(A) 2

(B) $\frac{9}{3}$

(C) $\frac{9}{4}$

~~(D)~~ $\frac{9}{2}$



$\int_{0}^{3} \sqrt{2}\,x \Rightarrow \sqrt{2}\,[x^2]_0^3$

$\sqrt{2}$

9) Area of the region bounded by the curve $y^2=x$ and the lines $x=1$, $x=4$ and X-axis in the first quadrant is _____

(A) ~~$\frac{14}{3}$~~

(B) $\frac{7}{3}$

(C) $\frac{28}{3}$

(D) 14

10) The general solution of the differential equation $\frac{dy}{dx} = e^{x-y}$ is _____

$\frac{dy}{dx} = e^x \cdot e^{-y}$

(A) $e^x + e^y = C$

(B) $e^{-x} + e^y = C$

(C) $e^{-x} + e^{-y} = C$

~~(D)~~ $e^x - e^y = C$

$e^y dx = \frac{e^x}{} dy$

$e^x - e^y = 1$

11) The number of arbitrary constants in the particular solution of a differential equation of order 4 are :

~~(A)~~ 4

(B) 2

(C) 3

(D) 0

12) Order and degree of the differential equation $e^{\frac{d^2y}{dx^2}} = x$ are _____ respectively.

~~(A)~~ 2 and not defined

(B) 1 and 2

(C) 2 and 1

(D) 1 and not defined

13) If $\vec{c}$ is the unit vector in the direction of sum of the vectors $\vec{a} = 2\hat{i} + 2\hat{j} - 5\hat{k}$ and $\vec{b} = 2\hat{i} + \hat{j} + 3\hat{k}$, then $|\vec{c}| =$ _____

~~(A)~~ $\frac{4}{\sqrt{29}}\hat{i} + \frac{3}{\sqrt{29}}\hat{j} - \frac{2}{\sqrt{29}}\hat{k}$

(B) 1

(C) 0

(D) -1

14) Let the vector $\vec{a}$ and $\vec{b}$ be such that $|\vec{a}| = 3$ and $|\vec{b}| = \frac{\sqrt{2}}{3}$, then $\vec{a} \times \vec{b}$ is unit vector, if the angle between $\vec{a}$ and $\vec{b}$ is _____

(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{3}$

(C) $\frac{\pi}{4}$ (D) $\frac{\pi}{2}$

15) The area of parallelogram whose adjacent sides are determined by the vectors $\vec{a} = \hat{i} - \hat{j} + 3\hat{k}$ and $\vec{b} = 2\hat{i} - 7\hat{j} + \hat{k}$ is _____

(A) $15\sqrt{2}$ (B) 15

(C) $\frac{15}{\sqrt{2}}$ (D) $\frac{15}{2}$

16) The distance of a point $(2, 5, -3)$ from the plane $6x - 3y + 2z - 4 = 0$ is _____

(A) $\frac{13}{\sqrt{7}}$ (B) $\frac{5}{7}$

(C) $\frac{5}{\sqrt{7}}$ (D) $\frac{13}{7}$

17) The coordinates of the foot of the perpendicular drawn from the origin to the plane $2x-3y+4z-12=0$ is _____

(A) $\left(\frac{12}{29}, -\frac{18}{29}, \frac{24}{29}\right)$

(B) $\left(\frac{24}{29}, -\frac{36}{29}, \frac{48}{29}\right)$

(C) $\left(\frac{24}{\sqrt{29}}, -\frac{36}{\sqrt{29}}, \frac{48}{\sqrt{29}}\right)$

(D) $\left(\frac{12}{\sqrt{29}}, -\frac{18}{\sqrt{29}}, \frac{24}{\sqrt{29}}\right)$

18) If $2x+3y-z+7=0$ and $x-2y+kz+2=0$ are two perpendicular planes, then $k =$ _____

(A) 4

(B) 8

(C) -4

(D) -8

19) Minimise : $Z=2x+3y$, subject to constraints $2x+4y\leq 12$, $x+y\leq 3, x\geq 0$ and $y\geq 0$.

(A) 12

(B) 9

(C) 0

(D) 6

(Space for Rough Work)

35

20) If $P(A) = \frac{6}{11}$, $P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$, then $P\left(\frac{A}{B}\right) =$ _____

(A) $\frac{4}{5}$ (B) $\frac{2}{3}$

(C) $\frac{4}{11}$ (D) $\frac{2}{11}$

21) For two mutually exclusive events A and B if $P(A) = \frac{1}{2}$, $P(A \cup B) = \frac{3}{5}$ and $P(B') = p$, then $p =$ _____

(A) $\frac{1}{5}$ (B) $\frac{9}{10}$

(C) $\frac{2}{5}$ (D) $\frac{1}{10}$

22) If A and B are two events such that $P(A) \neq 0$ and $P\left(\frac{B}{A}\right) = 1$, then _____

(A) $B \subset A$ (B) $B = \varnothing$

(C) $A = \varnothing$ (D) $A \subset B$

23) Let R be the relation in the set $\{x : x \in N, x \leq 4\}$ given by $R = \{(1, 1), (2, 2), (3,3)\}$ then, R is _____.

(A) reflexive and symmetric but not transitive

(B) symmetric and transitive but not reflexive

(C) reflexive and transitive but not symmetric

(D) an equivalence relation

(Space for Rough Work)

36

24) Function $f:\mathrm{R}\to\mathrm{R}$ defined as $f(x)=x^3$, f is _____.

(A) one-one and onto

(B) one-one but not onto

(C) many-one and onto

(D) neither one-one nor onto

25) If $f(x)=\frac{1+x}{1-x}; x\neq 1$, then $f(x)\cdot f(y)=$ _____.

(A) $f\left(\frac{x+y}{1-xy}\right)$

(B) $f(x\cdot y)$

(C) $f\left(\frac{x+y}{1+xy}\right)$

(D) $f\left(\frac{1}{1+xy}\right)$

26) $\cos^2\left(\sin^{-1}x\right)+\sin^2\left(\cos^{-1}x\right)=$ _____; $0<x<1$.

(A) $2\sqrt{1-x^2}$

(B) $2\left(x^2-1\right)$

(C) 0

(D) $2\left(1-x^2\right)$

(Space for Rough Work)

27) Solution set of $\tan^{-1}2x+\tan^{-1}3x=\frac{\pi}{4}$ is _____.

(A) $\left\{\frac{1}{6},-1\right\}$

(B) $\{0,1\}$

(C) $\left\{\frac{1}{6},1\right\}$

~~(D)~~ $\left\{\frac{1}{6}\right\}$

$\frac{2x+3x}{1-6x}=1$

$5x=1-6x$

$11x=1$

$x=\frac{1}{11}$

28) If $AB=\begin{bmatrix}-6 & 26\\ -1 & 19\end{bmatrix}$ and $11B^{-1}=\begin{bmatrix}5 & -3\\ 2 & 1\end{bmatrix}$, then $A=$ _____.

(A) $\begin{bmatrix}-2 & 4\\ 3 & -2\end{bmatrix}$

(B) $\begin{bmatrix}2 & 4\\ 3 & 2\end{bmatrix}$

(C) $\begin{bmatrix}2 & -4\\ -3 & 2\end{bmatrix}$

(D) $\begin{bmatrix}-2 & 4\\ 3 & 2\end{bmatrix}$

29) If $A=\begin{bmatrix}4 & 0 & 0\\ 0 & 3 & 0\\ 0 & 0 & 2\end{bmatrix}$ and $B=\begin{bmatrix}1 & 0 & 0\\ 0 & 2 & 0\\ 0 & 0 & 3\end{bmatrix}$, then $(A+B)^{-1}=$ _____.

~~(A)~~ $\frac{1}{25}I_3$

(B) $-\frac{1}{5}I_3$

(C) $\frac{1}{5}I_3$

(D) $-\frac{1}{25}I_3$

(Space for Rough Work)

$\begin{bmatrix}5 & 0 & 0\\ 0 & 5 & 0\\ 0 & 0 & 5\end{bmatrix}$

30) If $A = \begin{bmatrix} 1 & 5 \\ 6 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$, then which one of the following is incorrect.

(A) $(AB)' = A'B'$

(B) $A \cdot \text{adj } A = |A| I$

(C) $(A+B)' = B'+A'$

(D) $(AB)^{-1} = B^{-1} \cdot A^{-1}$

31) A(1, 3), B(0, 0) and C(k, 0) are vertices of Δ ABC. If area of Δ ABC is 3 units, then k is _____.

(A) 2

(B) 0

(C) -2

(D) ± 2

32) If $2\begin{vmatrix} \sin(A+B) & \cos(A+B) \\ \cos(A-B) & \sin(A-B) \end{vmatrix} + \sqrt{3} = 0$, then A = _____.

(A) $\frac{\pi}{6}$

(B) $\frac{\pi}{3}$

(C) $\frac{\pi}{12}$

(D) $\frac{\pi}{4}$

33) For $\begin{vmatrix} 2 & 3 & 5 \\ 1 & 0 & 7 \\ -1 & -2 & 4 \end{vmatrix}$, the sum of minor and cofactor of 7 = _____.

(A) 0

(B) 2

(C) -2

(D) -1

34) $\frac{d}{dx}\left(\text{cosec}^{-1} e^x\right) =$ _____.

(A) $\frac{1}{\sqrt{e^{2x}-1}}$

(B) $\frac{-1}{\sqrt{e^{2x}-1}}$

(C) $\sin^{-1}\left(e^x\right)$

(D) $\frac{-e^x}{\sqrt{e^{2x}-1}}$

35) If $f(x)=4x^3+3x^2+3x+4;\ x\neq 0$, then $\frac{d}{dx}\left(x^3\cdot f\left(\frac{1}{x}\right)\right)=$ _____.

(A) $24x^5+15x^4+12x^3+12x^2$

(B) $\frac{12}{x^2}+\frac{6}{x}+3$

(C) $\frac{x^2}{12}+\frac{x}{6}+\frac{1}{3}$

(D) $12x^2+6x+3$

36) $\frac{d}{dx}\left[\log\left(\frac{1}{x}\right)+\log\left(\frac{1}{x^2}\right)+\log\left(\frac{1}{x^3}\right)\right] =$ _____; $x>1$.

(A) $-\frac{6}{x}$

(B) $6x$

(C) $\frac{6}{x}$

(D) $-6x$

(Space for Rough Work)

37) If $x+1=e^{-y}$, then $\frac{d^2y}{dx^2}=$ _____.

(A) $\left(\frac{dy}{dx}\right)^3$

(B) $\frac{dy}{dx}$

(C) $\left(\frac{dy}{dx}\right)^2$

(D) $-\frac{dy}{dx}$

38) The slope of normal to the curve $y=2x^2+3\sin x$ at $x=0$ is _____.

(A) 3

(B) -3

(C) $\frac{1}{3}$

(D) $-\frac{1}{3}$

39) The point on the curve $x^2=2y$ which is nearest to the point (0, 5) is _____.

(A) $\left(2\sqrt{2},4\right)$

(B) (0, 0)

(C) $\left(2\sqrt{2},0\right)$

(D) (2, 2)

40) The interval in which $y=x^2\cdot e^{-x}$ is increasing is _____.

(A) $(-\infty,\infty)$

(B) $(2,\infty)$

(C) $(-2,0)$

(D) $(0,2)$

GU. BET- CE-2021

Test Booklet No. 1501 / 853

Test Booklet Set No. **15**

This booklet contains 32 pages.

DO NOT open this Test Booklet until you are asked to do so.

Important Instructions :

1) The Physics and Chemistry test consists of 80 questions. Each question carries 1 mark. For each correct response, the candidate will get 1 mark. For each incorrect response ¼ mark will be deducted. The maximum marks are 80.
2) This Test is of **2 hours** duration.
3) Use **Black Ball Point Pen only** for writing particulars on OMR Answer Sheet and marking answers by darkening the circle '●'.
4) Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5) **On completion of the test, the candidate must handover the Answer Sheet to the Invigilator in the Room / Hall. The candidates are allowed to take away this Test Booklet with them.**
6) The Set No. for this Booklet is 15 . Make sure that the Set No. printed on the Answer Sheet is the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
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BIOLOGY

1) In human, chromosome 1 has most genes _____ and the Y has the fewest genes _____, respectively.

(A) 2698, 231
(B) 2968, 213
(C) 2968, 231
(D) 2698, 213

2) In which body part of female Anopheles mosquito, gametes of parasite plasmodium fertilise and develop?

(A) Salivary gland
(B) Rectum
(C) RBC
(D) Gut

3) In cases of snakebites, the injection which is given to patients, contain preformed antibodies against the snake venom. This type of immunisation is called _____.

(A) Active immunity
(B) Both kinds of immunity
(C) Passive immunity
(D) Partial passive immunity

4) 'Contact inhibition' is the property of which cells?

(A) neoplastic cells
(B) normal cells
(C) the cells that possess oncogenes
(D) benign tumor cells

(Space for Rough Work)

5) Choose the correct option for the given columns :

Column - I (Source)	Column - II (Substance)	Column - III (Function)
(P) Trichoderma polysporum	(a) Statins	(i) clot bluster
(Q) Monascus purpureus	(b) streptokinase	(ii) organ - transplant
(R) Streptococcus	(c) cyclosporin	(iii) control of blood - cholesterol

	P	Q	R
(A)	(a - iii)	(c - i)	(b - ii)
(B)	(b - ii)	(a - i)	(c - iii)
(C)	(c - iii)	(b - i)	(a - ii)
(D)	(c - ii)	(a - iii)	(b - i)

6) Choose the correct option, which shows correct sequence of substances obtained during sequential process of sewage treatment.

(A) Primary sludge → flocs → effluent → anaerobic sludge

(B) Primary sludge → anaerobic sludge → flocs → effluent

(C) Primary sludge → effluent → flocs → anaerobic sludge

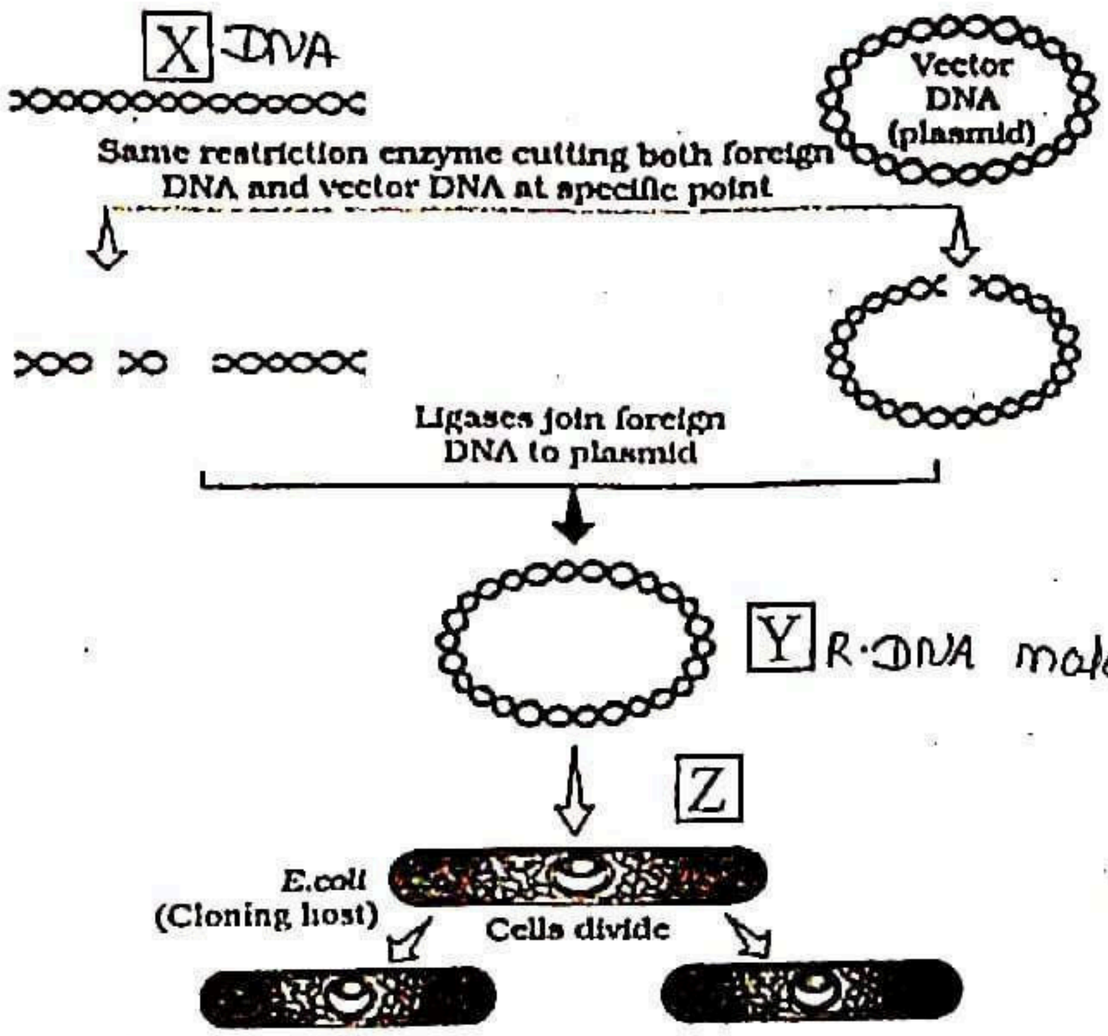
(D) Primary sludge → anaerobic sludge → effluent → flocs

(Space for Rough Work)

7) As biological - controller, Baculo viruses are pathogens to which organisms?

(A) fungi and insects
(B) insects and beetles
(C) insects and other arthropods
(D) beetles and arthropods

8) For given diagram choose the correct option for 'X', 'Y' and 'Z'.



	X	Y	Z
(A)	DNA	Recombinant DNA molecule	transformation
(B)	foreign DNA	Recombinant DNA molecule	transformation
(C)	foreign DNA	Recombinant DNA molecule	transduction
(D)	DNA	Recombinant DNA molecule	transduction

(Space for Rough Work)

9) A r-DNA is inserted within the coding sequence of an enzyme, β-galactosidase. This results into inactivation of the gene for synthesis of this enzyme, which is referred to as _____.

(A) recombinant inactivation
(B) insertional activation
(C) insertional inactivation
(D) combinational inactivation

10) Choose the correct option that represents correct sequential steps for PCR method.

(A) Denaturation → Annealing → Extension → Amplification
(B) Denaturation → Extension → Annealing → Amplification
(C) Denaturation → Annealing → Amplification → Extension
(D) Denaturation → Extension → Amplification → Annealing

11) Statement - I : ELISA is based on the principle of antigen - antibody interaction.

Statement - II : Infection by pathogen can be detected by the presence of antigens or by detecting the antibodies synthesised against the pathogens.

(A) Statements I and II both are correct
(B) Statement I is incorrect, but statement II is correct
(C) Statement I is correct, but statement II is incorrect
(D) Statements I and II both are incorrect

12) Human protein α - 1 - antitrypsin is used to treat which disease?

(A) lukemia
(B) emphysema
(C) cancer
(D) AIDS

(Space for Rough Work)

13) RNA interference takes place in all eukaryotic organisms as a method of cellular defense. This method involves silencing of a specific mRNA due to a _____ molecule.

(A) complementary ss DNA

(B) complementary ss RNA

(C) complementary ds DNA

(D) complementary ds RNA

14) Choose the correct statement for 'Allen's Rule'.

(A) Mammals from colder climates generally have longer ears and shorter limbs to minimise heat loss

(B) Mammals from colder climates generally have longer ears and longer limbs to minimise heat loss

(C) Mammals from colder climates generally have shorter ears and shorter limbs to minimise heat loss

(D) Mammals from colder climates generally have shorter ears and longer limbs to minimise heat loss

15) Logistic Growth is expressed by which of the following equation?

(A) $dN/dt = rN\left(\frac{K-N}{K}\right)$

(B) $dN/dt = rN$

(C) $N_t = N_o\, e^{rt}$

(D) $dN/dt = N\left(\frac{K-N}{K}\right)$

(Space for Rough Work)

16) Which species of plant employs 'sexual deceit' to get pollination done by a species of bee?

(A) Yucca

(B) Kigelia

(C) Commelina

(D) Mediterranean orchid

17) 'Species - Area relationships' was given by which scientist?

(A) Allen

(B) Alexander von Humboldt

(C) Paul Ehrlick

(D) Gause

18) Amazon rain forest is being cut and cleared for cultivating which plant?

(A) barley

(B) maize

(C) sugarcane

(D) soya beans

19) Statement I : In many cultures, tracts of forest were set aside, and all the trees and wildlife within were venerated and given total protection are referred as sacred groves.

Statement II : In Meghalaya, the sacred groves are the last refuges for a large number of rare and threatened animals.

(A) Statements I and II both are correct

(B) Statement I is incorrect, but statement II is correct

(C) Statement I is correct, but statement II is incorrect

(D) Statements I and II both are incorrect

(Space for Rough Work)

20) Select the correct option showing correct sequence for the structures developed by Penicillium, Hydra and sponges for Asexual mode of reproduction.

(A) Zoospores, buds, gemmules
(B) Fragmentation, gemmules, buds
(C) Conidia, buds, gemmules
(D) Fragmentation, buds, gemmules

21) Select the correct option for seasonal breeders.

(A) monkeys, dogs
(B) dogs, sheep
(C) human, tiger
(D) human, apes

22) Match the following columns for organisms and meiocytes and choose the correct option.

Column - I (Name of the Organism)	Column - II (Meiocytes)
(P) Housefly	(i) 12
(Q) Fruit fly	(ii) 42
(R) Butterfly	(iii) 08
(S) Rat	(iv) 360

	P	Q	R	S
(A)	(i)	(iv)	(iii)	(ii)
(B)	(i)	(iii)	(iv)	(ii)
(C)	(ii)	(iii)	(iv)	(i)
(D)	(ii)	(iv)	(iii)	(i)

(Space for Rough Work)

23) Study the following statements :

I) Pollen grains of many species cause severe allergies and bronchial afflictions in some people often leading to chronic respiratory disorders.

II) Pollen grains are rich in nutrients.

III) Carrot grass that came into India as a contaminant with imported rice.

Choose the option for the correct statements :

(A) Statements I and III are correct, but statement II is incorrect

(B) All statements are incorrect

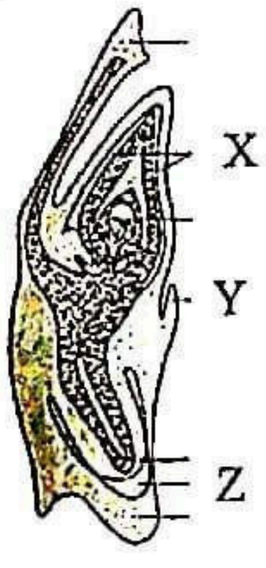
(C) Statements I and II are correct but statement III is incorrect

(D) All given statements are correct

24) What will be the respective ploidy of the cells of the nucellus, MMC (Megaspore Mother Cell), the functional megaspore and female gametophyte?

(A) 2n, n, n, n
(B) 2n, n, n, 2n
(C) 2n, 2n, n, n
(D) n, 2n, n, 2n

25) For given diagram, choose the correct labelling for 'X', 'Y' and 'Z'.



	X	Y	Z
(A)	scutellum	coleoptile	radicle
(B)	coleoptile	shoot apex	coleorhiza
(C)	shoot apex	epiblast	rootcap
(D)	coleoptile	epiblast	rootcap

(Space for Rough Work)

26) The entry of oxygen and water into the seed during germination is facilitated by _____.

(A) Integuments
(B) Micropyle
(C) Seed coat
(D) Hilum

27) The major features of embryonic development at various months of pregnancy are given below. Choose the correct option for correct sequential events.

I) The first movements of the foetus
II) The foetus develops limbs and digits
III) The embryo's heart is formed
IV) The body is covered with fine hair

(A) (II), (IV), (I), (III)
(B) (IV), (II), (I), (III)
(C) (II), (III), (IV), (I)
(D) (III), (II), (I), (IV)

28) Placenta also acts as an endocrine tissue and produces several hormones choose the correct option for it.

(A) hPL, hCG, progesterone, oxytocin
(B) hPL, hCG, estrogen, relaxin
(C) hPL, hCG, estrogen, progesterone
(D) hPL, hCG, progesterone, relaxin

29) In male, for normal fertility, X sperms must have normal shape and size and Y sperms must show vigorous motility.

	X		Y
(A)	at least 60%	,	at least 40%
(B)	maximum 60%	,	minimum 40%
(C)	at least 40%	,	at least 60%
(D)	minimum 60%	,	maximum 40%

(Space for Rough Work)

30) Which the part of oviduct, joins the uterus?

(A) Fimbriae
(B) Isthmus
(C) Ampulla
(D) Infundibulum

31) Choose the correct option for full term of PID.

(A) Pregnancy Inflammatory Disease
(B) Pelvic Inflammatory Disease
(C) Pregnancy Infection Disease
(D) Pelvic Infection Disease

32) Choose correct option for non - medicated IUDs.

(A) Lippes loop
(B) Multiload 375
(C) LNG - 20
(D) CuT

33) Select the incorrect option for ART.

(A) IUT - The embryos upto 8 blastomeres could be transferred into the fallopian tube.
(B) ICSI - A sperm is directly injected into the ovum.
(C) GIFT - Transfer of an ovum collected from a donor into the fallopian tube of another female.
(D) ZIFT - The early embryo could be transferred into the fallopian tube.

34) Which characteristic feature of Dog flower plant shows incomplete dominance?

(A) Colour of the flower
(B) Seed colour
(C) Height of the plant
(D) Seed shape

(Space for Rough Work)

35) The phenotype of one parent for skin colour is AABBCC and other parent is aabbcc. What will be the skin colour and genotype for their progeny?

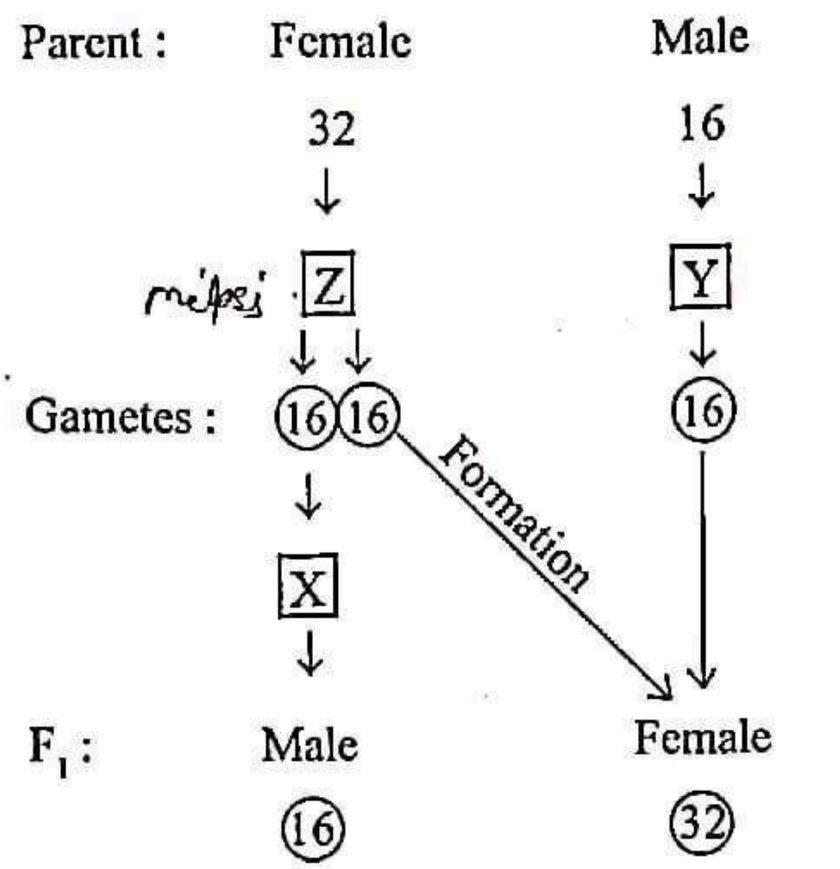
(A) darkest skin colour, AaBbCc

(B) lightest skin colour, AaBbCc

(C) intermediate skin colour, AaBbCc

(D) intermediate skin colour, AaBBCc

36) For given chart, choose correct option for 'X', 'Y' and 'Z'.



	X	Y	Z
(A)	Parthenogenesis	Mitosis	Meiosis
(B)	Mitosis	Meiosis	Parthenogenesis
(C)	Parthenogenesis	Meiosis	Mitosis
(D)	Meiosis	Mitosis	Parthenogenesis

(Space for Rough Work)

37) Linked genes HBA1 and HBA2 are located on which pair of chromosomes?

(A) 11
(B) 14
(C) 22
(D) 16

38) Study the following statements :

I) Bacteriophage lambda has 5386 base pairs (bp)
II) E. coli has 4.6×10^6 bp
III) haploid content of human DNA is 3.3×10^9 bp

Find the option for incorrect statement.

(A) Only statement I
(B) Only statement III
(C) Only statement II
(D) Statements I and II

39) Choose the correct option for conclusion of Hershey - Chase experiment.

	Experiment		Conclusion
(A)	Bacteriophage, Radioactive (^{32}S) labelled protein capsule	→	Radioactive (^{32}S) detected in cells + No Radioactivity detected in supernatant
(B)	Radioactive (^{32}P) labelled DNA	→	No Radioactive detected in cells + Radioactive detected (^{32}P) in supernatant
(C)	Bacteriophage, Radioactive (^{35}S) labelled protein capsule	→	No Radioactive (^{35}S) detected in cells + Radioactive (^{35}S) detected in supernatant
(D)	Radioactive (^{35}P) labelled DNA	→	Radioactive (^{35}P) detected in cells + No Radioactivity detected in supernatant

40) A segment of DNA coding for a polypeptide, the structural gene in a transcription unit is called _____.

(A) Cistron
(B) Octamer
(C) Nucleosome
(D) Chromatin

(Space for Rough Work)

GUJCET Biology

2021 Paper Answer Key (Eng)

BIOLOGY (ENG) SET - 15

Question No.	Answer	Question No.	Answer
1	C	21	B
2	D	22	B
3	C	23	C
4	B	24	C
5	D	25	D
6	C	26	B
7	C	27	D
8	B	28	C
9	C	29	A
10	A	30	B
11	A	31	B
12	B	32	A
13	D	33	A
14	C	34	A
15	A	35	C
16	D	36	A
17	B	37	D
18	D	38	A
19	C	39	C
20	C	40	A