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MAT 2020 Question Paper

Management Aptitude Test conducted by AIMA

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MANAGEMENT APTITUDE TEST (MAT)

Held on : February 2020

Time : 2.5 hrs

(BASED ON MEMORY)

Maximum Marks : 200

SECTION-A : English Language

DIRECTIONS (Qs. 1 - 20) : Read the passages given below to answer the questions that follow.

Passage-1

Modern economies do not differentiate between renewable and non-renewable materials, as its method is to measure everything by means of a money price. Thus, taking various alternatives fuels, like coal, oil, wood or water power: the only difference between them recognised by modern economics is relative cost per equivalent unit. The cheapest is automatically the one to be preferred, as to do otherwise would be irrational and 'uneconomic'. From a Buddhist point of view of course this will not do, the essential difference between non-renewable fuels like coal and oil on the one hand and renewable fuels like wood and water power on the other cannot be simply overlooked. Non-renewable goods must be used only if they are indispensable, and then only with the greatest care and the highest concern for conservation. To use them carelessly or extravagantly is an act of violence, and while complete non-violence may not be possible on Earth, it is nonetheless the duty of man to aim at deal of non-violence in all he does.

- Which of the following statements may be assumed to be true from the information in the passages?
 - The writer finds the attitude of modern economists towards natural resources to be uneconomic.
 - Buddhist economists focus on sustainability.
 - To use oil non-essentials is contrary to the Buddhist economic philosophy
 - To fell a tree is an act of violence not permitted by Buddhist economists
- According to the passage, Buddhist economists are not in favour of
 - measuring everything in terms of money
 - using non-renewable sources
 - economic development
 - applying non-violence to every sphere of life
- In this passage the author is trying to
 - differentiate between renewable and non-renewable materials
 - show that the modern economist is only concerned with costs
 - underline the need for conserving natural resources
 - different between two economic philosophies
- The Buddhist economist's attitude implies that fuels like coal and oil must be used only if
 - there is a plentiful supply
 - wood and water can be dispensed with

- the relative cost of each is than of wood and water
- there is no alternative fuel available

Passage - 2

A distinction should be made between work and occupation. Work implies necessity; it is something that must be done as contributing to the means of life in general and to one's own subsistence in particular. Occupation absorbs time and energy so long as we choose to give them; it demands constant initiative, and it is its own reward. For the average person the element of necessity in work is valuable, for he is saved the mental stress involved in devising outlets for his energy. Work has for him obvious utility, and it brings the satisfaction of tangible rewards. Whereas occupation is an end in itself, and we therefore demand that it shall be agreeable, work is usually the means to other ends-ends which present themselves to the mind as sufficiently important to compensate for any disagreeableness in the means. There are forms of work, of course, which since external compulsion is reduced to a minimum, are hardly to be differentiated from occupation.

The artist, the imaginative writer, the scientist, the social worker, for instance, find their pleasure in the constant spontaneous exercise of creative energy and the essential reward of their work is in the doing of it. In all work performed by a suitable agent there must be a pleasurable element, and the greater the amount of pleasure that can be associated with work, the better. But for most people the pleasure of occupation needs the addition of the necessity provided in work. It is better for them to follow a path of employment marked out for them than to have to find their own.

- The activities of the artists, the writer, the scientist etc. may be considered to be occupations because
 - they often does not have any additional value
 - compulsion is reduced to a minimum and they are agreeable
 - their work occupies time and energy which the workers choose to give them
 - they care only for the pleasure without any consideration of reward
- What may be the chief reason for a person taking up an occupation?
 - a desire to make profit
 - an irresistible urge to do something uncommon
 - a wish to do something useful to society
 - a desire to do something which requires initiative and doing it at will and pleasure
- The distinction between work and occupation is as follows
 - work at all times is unpleasant and occupation is always agreeable

- (b) In work there is an element of necessity which is totally wanting in occupation
 - (c) Work has obvious utility and brings tangible rewards, while occupation is an end in itself
 - (d) Work and occupation often seem to be so very much alike that no distinction can be made between them
8. Which of the following statements is not true according to the information contained in the passage?
- (a) Work is something done as contributing to the means of life in general and to one's own subsistence in particular.
 - (b) Occupation saves an average person from the mental stress involved in devising outlets for his energy
 - (c) Work brings in tangible rewards while occupation is not utilitarian
 - (d) Some forms of work which shows approximation to occupation

Passage - 3

It is undeniable that some very useful analogies can be drawn between the relational systems of computer mechanism and the relational systems of brain mechanism. The comparison does not depend upon any close resemblance between the actual mechanical links which occur in brains and computers; it depends on what the machines do. Furthermore, brains and computers can both be organised so as to solve problems. The mode of communication is very similar in both the cases, so much so that computers can now be designed to generate artificial human speech and even, by accident, to produce sequences of words which human beings recognise as poetry. The implication is not that machines are gradually assuming human forms, but that there is no sharp break of continuity between what is human, what is mechanical.

9. From the passage, what is evident regarding the author thoughts in the matter?
- (a) Computers are now naturally programmed to produce poetry
 - (b) Computers are likely to usurp the place of intellectual superiority accorded to the human brain.
 - (c) The resemblance that the computer bears to the human brain is purely mechanical
 - (d) The mixing up of word sequences in the computer can result in poetry.
10. Why have the computers acquired a proven ability of performing many of the functions of the human brain?
- (a) The brain of modern man is unable to discharge its functions properly on account of over-reliance on machines
 - (b) The sophisticated computer mechanism is on the verge of outstripping human mental faculties
 - (c) The process of organising and communicating are similar in both cases
 - (d) The mechanics of the human brain have been introduced in the computer
11. The resemblance between the human brain and the computer is
- | | |
|----------------|------------------|
| (a) imaginary | (b) intellectual |
| (c) mechanical | (d) functional |

12. Points of dissimilarity between the human brain and the computer don't extend to
- (a) the faculty of composing poetry
 - (b) methods of communication
 - (c) the faculty of human speech
 - (d) the faculty of management and organisation

Passage - 4

Humans have probably always been surrounded by their kin - those to whom they have been related by blood or marriage. But the size, the composition, and the functions of their families and kinship groups have varied tremendously. People have lived not only in the "nuclear family" made up of just the parents and their offspring, which is standard in the West and has been found almost everywhere, they have lived in extended families and in formal clans; they have been 'avunculocal', they have been 'ultrolateral', they have been conscious of themselves as heirs of lineages hundred of generations deep. However, constructed, the traditional kinship group has usually provided those who live in it with security, identity, and indeed with their entire scheme of activities and beliefs.

The nameless billions of hunter-gatherers who have lived and died over the past several million years have been embedded in kinship groups, and when people started to farm, their universe remained centered on kinship. Now that there was a durable form of wealth which could be hoarded (grain), some families became more powerful than other; society became stratified, and genealogy became an important means of justifying and perpetuating status. During the past few centuries, however, in part of the world- in Europe and the countries that have been developing along European lines-a process of fragmentation has been going on. The ties and the demands of kinship have been weakening, the family has been getting smaller and, some say, less influential, as the individual, with a new sense of autonomy and with new obligations to self has come to the foreground.

A radically different mental order that is self-centered is traceable not to any single historical development as much as to the entire flow of Western history since at least the Renaissance has taken over. The political and economic effects of this rise in individual self- consciousness have been largely positive: civil rights are better protected and opportunities are greater in the richer, more dynamic countries of the West; but the psychological effects have been mixed. Something has been lost: a warmth, a sanity, and a supportiveness that are apparent among people whose family networks are still intact. Such qualities can be found in most of the Third World and in rural pockets of the U.S., but in the main stream of post-industrial society the individual is increasingly left to himself, to find meaning, stability, and contentment however he can.

An indication of how far the disintegration of traditional kinship has advanced is that a surprising number of Americans are unable to name all four of their grandparents. So is the single - parent family-the mother-child unit, which some anthropologists contend is the real nucleus of kinship, having already contracted to the relatively impoverished nuclear family.

Still other anthropologists explain what is happening somewhat differently; we are adopting delayed system of marriage, they say, with the length of the marriage chopped off at both ends. But many adults aren't getting married at all; they are putting "self-fulfillment" before marriage and children and are having nothing further to do with kinship after leaving their parents' home; their family has become their work associate or their circle of best friends. This is the most distressing trend of all; the decline in the capacity of long-term intimate bonding.

13. Which of the following is indicative of the extent of disintegration of kinship groups?
 - (a) A large number of Americans are unable to name all four of their grandparents
 - (b) Growing number of single-parent families
 - (c) Decline in the capacity of marriage
 - (d) All of the above
14. Which of the following statements is not true?
 - (a) When people started to farm, kinship became less important
 - (b) Some families became more powerful than others after farming was initiated
 - (c) Genealogy became an important means of perpetuating status after the advent of farming
 - (d) Stratification of society was a result of hunter - gatherers taking up farming
15. The passage would most likely to appear in
 - (a) A report on the impact of the deterioration of kinship of groups on third world countries
 - (b) An introduction to a journal focusing on correlation between the decline of traditional kinship groups and stratification of society
 - (c) A newspaper article that focuses on the changes in kinship patterns and the effect of those changes on individuals
 - (d) A sociological review pointing out the political and economic repercussions of the decline of the nuclear family
16. Which of the following statements cannot be inferred from the above passage?
 - (a) Smaller families are more autonomous and influential
 - (b) The rise of the individuals can largely be viewed as a western phenomenon
 - (c) A different mental order is in evidence and can be traced to the renaissance period
 - (d) Mainstream post-industrial society would benefit from a resurgence of kinship groups

Passage - 5

Compared with other experimental sciences, astronomy has certain limitations. First, apart from meteorites, the Moon, and the nearer planets, the objects of study are inaccessible and cannot be manipulated, although nature sometimes provides special conditions, such as eclipses and other temporary effects. The astronomer must content himself with studying radiation emitted or reflected from celestial bodies. Second, from the Earth's surface these are viewed through a thick atmosphere that completely absorbs most radiation except within certain

'windows', wavelength regions in which the radiation can pass through the atmosphere relatively freely in the optical, near-infrared, and radio bands of the electromagnetic spectrum; and even in these windows the atmosphere has considerable effects. For light, these atmospheric effects are as follows: (1) some absorption that dims the radiation, even in a clear sky; (2) refraction, which causes slight shift in the direction so that the object appears in a slightly different place; (3) scintillation i.e., fluctuations in brightness of effectively point - like sources such as stars, fluctuations that are, however, averaged out for objects with larger images, such as planets; (4) image movement because of atmospheric turbulence which spreads the image of a tiny point over an angle of nearly one arc second or more on the celestial sphere (one arc second equals 1/3, 600 degrees); and (5) background light from the night sky.

The obscuring effects of the atmosphere and its clouds are reduced by placing observing stations on mountains, preferably in desert regions (e.g., southern California and Chile), and away from city lights. The effects are eliminated by observing from high-altitude aircraft, balloons, rockets, space probes, and artificial satellites. From stations all or most of the atmosphere, gamma rays and X-rays, high-energy radiation of extremely short wavelengths and far-ultraviolet rays and far-infrared radiation, can be measured. At radio wave-lengths between about one centimeter and 20 meters, the atmosphere (even when cloudy) has little effect, and man-made radio signals are the chief interference.

Third, the Earth is a spinning, shifting, and wobbling platform. Spin on its axis causes alternation of day and night and an apparent rotation of the celestial sphere with stars moving from East to West. Ground - based telescopes use a mounting that makes it possible to neutralise the rotation of Earth relative to the stars; with an equatorial mounting driven at a proper speed, the direction of the telescope tube can be kept constant for hours while the Earth turns under the mounting.

In addition to the daily spin, there are much more gradual effects, called precession and nutation. Gravitational action of the Sun and Moon on the Earth's equatorial bulge causes the Earth's axis to process like a top or gyroscope, gradually tracing out a circle on the celestial sphere in about 26,000 years, and also to nutate or wobble slightly in a period of 18.6 years. The Earth's rotation and orbital motion provide the basic standard of directions of stars, so that the uncertainties in the rate of these motions can lead to quite small but important uncertainties in measurements of stellar movements.

17. One of the type of radiations that cannot pass through the atmospheric 'windows' without distortion is
 - (a) far-ultraviolet spectrum
 - (b) near infra-red spectrum
 - (c) optical band in the spectrum
 - (d) radio band in the spectrum
18. The atmospheric effects Earth - based experiments that is not mentioned in the passage is
 - (a) twinkling
 - (b) refraction
 - (c) image movement
 - (d) clouds from volcano eruptions

19. What is the purpose of telescope mounting?
 (a) to neutralise atmospheric interference
 (b) to neutralise the effect of precession
 (c) to neutralise the effect of diurnal spinning
 (d) to neutralise the effect of nutation
20. The orbital motion of the Earth
 (a) is partly caused by the moon
 (b) can have uncertain rates
 (c) has a periodicity of 18.6 years
 (d) is neutralised by telescope mounting

DIRECTIONS (Qs. 21-23): Fill in the blanks with appropriate words.

21. The pittance that the destitute received from the government cannot keep them from
- (a) Indulgent, desolation (b) Meticulous, despair
 (c) Meager, poverty (d) Small, crime
22. Compromise is to passionate natures because it seems to surrender; and to intellectual natures because it seems a
- (a) Unsited, submission
 (b) Odious, confusion
 (c) Intimidation, dichotomy
 (d) Inherent, fabrication.
23. The no-detention policy and the provision for continuous and comprehensive evaluation under the Right to Education Act have led to both as well as approval from educationists and parents, with the fault-finders the discourse.
- (a) critique, subjugating (b) applaud, criticising
 (c) criticism, dominating (d) acceptance, steering

DIRECTIONS (Qs. 24-25): Choose the alternatives that can replace the given words/sentence.

24. A group of three powerful people.
 (a) Trio (b) Tritium
 (c) Trivet (d) Triumvirate
25. Impossible to describe
 (a) Miraculous (b) Ineffable
 (c) Stupendous (d) Appalling

DIRECTIONS (Qs. 26-28): Select the most appropriate meaning of the given idiom/phrase.

26. A man of straw
 (a) A worthy fellow
 (b) A man of no substance
 (c) A very active man
 (d) A selfish person
27. To have an axe to grind
 (a) A private end to serve
 (b) To fail to arouse interest
 (c) To have no result
 (d) To work for both sides
28. Cut no ice with me
 (a) Had not influence on me
 (b) Did not hurt me
 (c) Did not benefit me
 (d) Did not make me proud

DIRECTIONS (Qs. 29-31): Choose the order of the sentences marked A, B, C, D, and E to form a logical paragraph.

29. (A) While shrinking winter-spans are considered by specialists as a sure sign that climate change is a reality we cannot ignore, at the other end of the spectrum, hot summers are no less debilitating.
 (B) Heat waves in summer, cold waves in winter and extreme rainfall when it is least expected have almost become the norm.
 (C) Prediction of these phenomena is itself so difficult, not for lack of effort but because of the theoretical limitations of the models being used in the calculations.
 (D) Broadly speaking, there is no doubt that summer heat is worsening by the year in parts of India.
 (E) Each of these rounds takes its own toll on lives and livelihoods.
 (a) EABCD (b) BEACD
 (c) BAECD (d) BEADC
30. (A) A famous Japanese rock garden is at Ryoan-Ji in North-West Kyoto, Japan
 (B) The rocks of various sizes are arranged on small white pebbles in five groups, each comprising five, two, three, two and three rocks.
 (C) The garden is 30 meters long from East to West and 10 meters from North to South.
 (D) The garden contains 15 rocks arranged on the surface of white pebbles in such a manner that visitors can see only 14 of them at once from whichever angle the garden is viewed.
 (E) There are no trees, just 15 irregularly shaped rocks of varying sizes, some arranged by gravel/sand that is raked every day.
 (a) ACEBD (b) CAEDB
 (c) DEABC (d) BADEC
31. (A) Last March, I was invited to present a paper on the topic of whether the mistakes of the 20th century would be repeated in the 21st century as well.
 (B) The economic crisis hadn't become grave then.
 (c) But today the world is in the midst of the biggest economic crisis since 1929.
 (D) The key difference between then and now is that the old power structures have finally disappeared.
 (E) Now even the US is pleading for financial help from China.
 (a) BCADE (b) ABCDE
 (c) CDEAB (d) DEABC

DIRECTIONS (Qs. 32- 34) : Against each key word are given four suggested meanings. Choose the word or phrase which is opposite in meaning to the key word.

32. Cleft
 (a) Split (b) Assembly
 (c) Wasteful (d) Parfait

33. Clemency
 (a) Harshness (b) Mercifulness
 (c) Mildness (d) Leniency
34. Comely
 (a) Pleasing in manner (b) Personable
 (c) Unattractive (d) Aspiring

DIRECTIONS (Qs. 35-37): Against each key word are given four suggested meanings. Choose the word or phrase which is similar in meaning to the key word.

35. Circumscribe
 (a) Vague (b) Rotate
 (c) Hinder (d) Bound
36. Cogent
 (a) Convincing (b) Ineffective
 (c) Irrelevant (d) Muddled
37. Trite
 (a) Illogical (b) Hackneyed
 (c) Bitter (d) Sharp

DIRECTIONS (Qs. 38-40): Each sentence given below is divided into three parts labeled as (a), (b) and (c). One of these three parts may contain an error. If the error is in the part labeled as (a), then that is your answer. If you feel that there are no errors, then mark (d) as your answer.

38. He asked me (a) / if I am happy and (b) / I replied that I was not. (c) / No error (d)
39. The capital of Yemen (a) / is situating (b) / 2190 meters above sea level (c) / No error (d)
40. When Rahul working in Mumbai, (a) / and Maya travelling most of the week, (b) / the house seems pretty empty. (c) / No error (d)

SECTION-B : Intelligence & Critical Reasoning

DIRECTIONS (Qs. 41-43): Answer these questions based on the information given below.

Mr. X visits six different cities Delhi, Kolkata, Bhopal, Jaipur, Mumbai and Hyderabad but not necessary in the same order on six different days of the week starting from Monday to Saturday. The number of days after the visit to Delhi and before the visit to Kolkata is same. Delhi is visited before Kolkata but not on Wednesday. Jaipur is neither visited on Monday nor on Wednesday. There is a gap of only two days between the visit to Jaipur and Hyderabad. Mumbai is visited just after Hyderabad but not on Thursday.

41. On which day Mr. X visited Bhopal?
 (a) Thursday (b) Wednesday
 (c) Tuesday (d) Friday
42. Which of the following is correct?
 (a) Kolkata is visited on Friday.
 (b) Hyderabad is visited on Monday
 (c) There is a gap of two days between the visit to Bhopal and Delhi.
 (d) Jaipur is visited just after Kolkata.

43. Which place is visited on Thursday?
 (a) Jaipur (b) Bhopal
 (c) Kolkata (d) Mumbai

DIRECTIONS (Qs. 44-47): Each of these questions has an Assertion (A) and a Reason (R).

Give answer:

- (a) if both A and R are true and R is correct explanation of A
 (b) if both A and R are true but R is not the correct explanation of A
 (c) if A is true but R is false
 (d) if A is false but R is true
44. **Assertion (A)** : People should prefer unpolished rice.
Reason (R) : Polished rice lacks vitamin B.
45. **Assertion (A)** : The blood is red due to the presence of haemoglobin.
Reason (R) : Haemoglobin is a red pigment.
46. **Assertion (A)** : Indian President is the head of state.
Reason (R) : Indian parliament consists of the President, Lok-Sabha and Rajya Sabha.
47. **Assertion (A)** : National Science Day is celebrated in India on 28 February each year.
Reason (R) : On this day famous scientist C. V. Raman was born.

DIRECTIONS (Qs. 48-50): Answer these questions based on the information given below.

Six boxes P, Q, R, S, T and U are kept one above the other containing different number of shirts from 10-90. Two boxes are kept between box T and the box containing 56 shirts, which is kept at the bottom. Only one box is kept between box R and the box containing 56 shirts. Two boxes are kept between box P and box R. One box is kept between box P and box containing 41 shirts, which is not kept at the top. Box Q contains 5 shirts more than box T. Only one box is kept between box Q and box containing 41 shirts. Box S is kept below box U which contains 66 shirts. Box P contains 40 shirts less than the box which contains 90 shirts.

48. What is the total number of shirts contained in boxes U and Q?
 (a) 100 (b) 112
 (c) 96 (d) 136
49. How many boxes are kept between box U and box S?
 (a) One (b) Two
 (c) Three (d) None
50. What is the total number of shirts contained in top and bottom boxes?
 (a) 106 (b) 140
 (c) 156 (d) 97

DIRECTIONS (Qs. 51-52): From the given options find the word which is related to the given words in the questions.

51. Kolkata, Mumbai, Mangalore
 (a) Delhi (b) Lucknow
 (c) Cochin (d) Hyderabad
52. Bhilai, Durgapur, Bokaro
 (a) Baroda (b) Chennai
 (c) Chandigarh (d) Rourkela

DIRECTIONS (Qs. 53-54) : Find the pair of elements, that will come at the place of '?' in the following questions.

53. Apostate : Religion :: ?
 (a) Teacher: Education (b) Traitor : Country
 (c) Potentate: Kingdom (d) Jailer: Law
54. 9 : 50 :: ?
 (a) 20 : 105 (b) 22 : 110
 (c) 18 : 190 (d) 15 : 225
55. Replace the question mark (?) in the following series with suitable option.
 C-3, E-5, G-7, I-9, ?, ?
 (a) M-18, K-14 (b) K-11, M-13
 (c) X-24, M-21 (d) 0-15, X-24
56. What comes in place of question mark (?) in the series given below?
 P3C, R5F, T8I, V12L, ?
 (a) Y170 (b) X16M
 (c) X170 (d) X160
57. Find the missing term in given sequence.
 ABP, CDQ, EFR, ?
 (a) GHS (b) GHT
 (c) HGS (d) GHR
58. Find the missing term in the given sequence.
 AB, DEF, HIJK, ?, STUVWX
 (a) LMNO (b) LMNOP
 (c) MNOPQ (d) QRSTU

DIRECTIONS (Qs. 59-60) : These questions are based on the letter series. In each of these series, some of the letters are missing. Select the correct alternative.

59. abca_bcaab_ca_bbc_a
 (a) ccaa (b) bbaa
 (c) abac (d) abba
60. _cb_ca_bacb_ca_bac_d
 (a) badddb (b) bbbddd
 (c) addddb (d) addbbb
61. Five people are standing in a queue outside the ATM for cash withdrawal. The two persons standing at the extreme ends are Pankaj and Vijender. Anita is standing behind Rohit. Babita is in front of Vijender. Rohit is standing between Pankaj and Anita. Counting from the front, at which place is Anita?
 (a) Fourth (b) Second
 (c) First (d) Third
62. A clock is set right at 8 am. The clock gains 10 min in 24 h. What will be the right time when the clock indicates 1 pm on the following day?
 (a) 11:40 pm (b) 12:48 pm
 (c) 12 pm (d) 10 pm
63. After starting from a point, a man walks 4 km towards West, then turning to his right he moves 4 km. After this he again turns right and moves 4 km. Which choice given below indicates the correct direction in which he is from his starting point?
 (a) North (b) East
 (c) South (d) West

64. Five villages P, Q, R, S and T situated close to each other. P is to the West of Q, R is to the South of P, T is to the North of Q and S is to the East of T. Then, in which direction R is with respect to S?
 (a) North-West (b) South-East
 (c) South-West (d) Data inadequate
65. Pointing to a man in a photograph, a woman said, "His brother's father is the only son of my grandfather". How is the woman related to the man in the photograph?
 (a) Mother (b) Aunt
 (c) Sister (d) Daughter
66. Q's mother is the sister of P and daughter of M. S is the daughter of P and sister of T. How is M related to T ?
 (a) Grandmother
 (b) Father
 (c) Grandfather
 (d) Grandfather or Grandmother
67. Pointing to a man, a lady said, "His mother is the only daughter of my mother". How is the lady related to the man?
 (a) Mother (b) Daughter
 (c) Sister (d) Aunt
68. Six persons A, B, C, D, E and F sit in two rows of three persons each. If E is not at any end of rows, D is second to the left of F, C is the neighbour of E and is sitting diagonally opposite to D and B is the neighbour of F, then who will sit opposite to B?
 (a) A (b) E
 (c) C (d) D

DIRECTIONS (Qs. 69-70) : Each question given below has a statement followed by two courses of action numbered I and II. You have to assume everything in the statement to be true and on the basis of the information given in the statement, decide which of the suggested course of action logically follows for pursuing.

Give answer :

- (a) if only I follows
 (b) if only II follows
 (c) if neither I nor II follow
 (d) if both I and II follow
69. **Statement** If the retired professors of some institutes are also invited to deliberate on restructuring of the organisation, their contribution may be beneficial to the institute.
Courses of Action :
 I Management may seek opinion of the employees before calling retired professors.
 II Management should involve experienced people for the systematic restructuring of the organisation.
70. **Statement:** Incessant rain for the past several days has posed the problem of overflowing and flood as the river bed is full of silt and mud.
Courses of Action :
 I The people should be made aware about the eminent danger over radio/television.
 II The silt and mud from the river bed should be cleared immediately after receding of the water level.

71. Consider the following statements and courses of action, decide which course/courses of action logically follows/ follow for pursuing.

Statement : Nuclear power cannot make a country secure.

Courses of Action :

I. We should stop further increasing our nuclear capabilities.

II. We should destroy out nuclear capability.

III. We should focus on improving diplomatic relations.

- (a) Only I follows (b) Only II follows
(c) Only III follows (d) Both I and II follow

72. In a class of 42 students, Mahesh's rank is 16th from the bottom. What is his rank from the top?

- (a) 25th (b) 26th
(c) 24th (d) 27th

73. Anu and Vinay are ranked seventh and eleventh, respectively from the top in a class of 31 students. What will be their respective ranks from the bottom in the class?

- (a) 20th and 24th (b) 24th and 20th
(c) 25th and 21st (d) None of these

74. There are five friends -Sachin, Kamal, Mohan, Arun and Ram. Sachin is shorter than Kamal, but taller than Ram. Mohan is the tallest. Arun is a little shorter than Kamal and a little taller than Sachin. Who is the second tallest?

- (a) Ram (b) Sachin
(c) Kamal (d) Arun

75. In a certain code, a number 13479 is written as AQFJL and 2568 is written as DMPN. How is 396824 written in that code?

- (a) QLPNMJ (b) QLPNMF
(c) QLPMNF (d) QLPNDF

76. In a certain code, CALANDER is written as CLANAEDR. How is CIRCULAR written in that code?

- (a) ICCRLURA (b) CRIUCALR
(c) CRIUCLRA (d) None of these

77. ENGLAND is written as 1234526 and FRANCE as 785291. How will GREECE be written in this coding scheme?

- (a) 381191 (b) 381911
(c) 394132 (d) 562134

DIRECTIONS (Qs.78-80) : There is a blank space in each of these questions in which only one of the four alternatives given under each question satisfies the same relationship as is round between the two terms on the other side of the sign ::.

Find the correct alternative to fill in the blank space.

78. Shoe : Leather ::

- (a) Bus : Conductor
(b) Train : Wagon
(c) Highway: Asphalt
(d) Medicine: Doctor

79. Condone : Offence ::

- (a) Overlook : Aberration
(b) Error: Omission
(c) Mitigate: Penitence
(d) Conviction : Criminal

80. Dinosaur : Dragon ::

- (a) Evolution : Revelation
(b) Gorilla: Soldier
(c) Snow : Ice
(d) Primeval : Medieval

SECTION-C : Mathematical Skills

81. If 15 men or 24 women or 36 boys can do a piece of work in 12 days, working 8h per day, how many men must be associated with 12 women and 6 boys to do another piece

of work $2\frac{1}{4}$ times as large in 30 days working 6 h per day?

- (a) 6 (b) 4
(c) 8 (d) 10

82. A part of ₹ 38800 is lent out at 6% per six months. The rest of the amount is lent out at 5% per annum after 1 year. The ratio of interest after 3 yr from the time when first amount was lent out is 5 : 4. Find the second part that was lent out at 5%.

- (a) ₹ 26600 (b) ₹ 28800
(c) ₹ 7500 (d) ₹ 28000

83. Find the principal if compound interest is charged on the principal at the rate of $16\frac{2}{3}\%$ per annum for 2 yr and the sum becomes ₹ 196.

- (a) ₹ 140 (b) ₹ 154
(c) ₹ 150 (d) None of these

84. Ashok borrows ₹ 1500 from two moneylenders. He pays interest at the rate of 12% per annum for one loan and at the rate of 14% per annum for the other. The total interest he pays for the entire year is ₹ 186. How much does he borrow at the rate of 12% ?

- (a) ₹ 1200 (b) ₹ 1300
(c) ₹ 1400 (d) ₹ 1000

85. A driver of an auto-rickshaw makes a profit of 20% on every trip when he carries three passengers and the price of petrol is ₹ 30 per L. Find the percentage profit for the same journey if he goes for four passengers per trip and the price of petrol reduces to ₹ 24 per L? (Assume that revenue per passenger is the same in both the cases).

- (a) 33.33% (b) 65.66%
(c) 100% (d) Data inadequate

86. A carpenter wants to sell 40 chairs. If he sells them at ₹ 156 per chair, he would be able to sell all the chairs. But for every ₹ 6 increase in price, he will be left with one additional unsold chair. At what selling price would he be able to maximise his profits (assuming unsold chairs remain with him)?

- (a) ₹ 198
(b) ₹ 192
(c) ₹ 204
(d) Cannot be determined

87. A reduction in the price of petrol by 10% enables a motorist to buy 5 gallons more for ₹ 180. Find the original price of petrol (in ₹ per gallon).

- (a) 400000 kg (b) 500000 kg
(c) 450000 kg (d) 600000 kg
106. A car driver, driving in a fog, passes a pedestrian who was walking at the rate of 2 km/h in the same direction. The pedestrian could see the car for 6 min and it was visible to him up to a distance of 0.6 km. What was the speed of the car?
(a) 2 km/h (b) 30 km/h
(c) 20 km/h (d) 8 km/h
107. Suppose that a maximum of 25 g of salt dissolves in 100 g of water. Any more salt, if added, remains undissolved and a sediment falls at the bottom. Now, water is evaporated from 1 kg of a 4% solution at the rate of 28 g per hour. After how long will it start sedimenting, approximately?
(a) 29 h (b) 31 h
(c) 35 h (d) 23 h
108. Six pipes are fitted to a water tank. Some of these are inlet pipes and the others outlet pipes. Each inlet pipe can fill the tank in 9 h and each outlet pipe can empty the tank in 6 h. On opening all the pipes, an empty tank is filled in 9 hr. The number of inlet pipes is
(a) 4 (b) 3
(c) 2 (d) 5
109. Out of 20 consecutive positive integers, two are chosen at random. The probability that their sum is odd is
(a) $\frac{10}{19}$ (b) $\frac{1}{20}$
(c) $\frac{19}{20}$ (d) $\frac{9}{19}$
110. There are two concentric circular tracks of radii 105 m and 119 m, respectively. A runs on the inner track and goes once round the track in 1 min 30s, while B runs on the outer track in 1 min 32 s. Who runs faster?
(a) A (b) B
(c) Cannot be determined (d) None of these
111. There are 125 middle level employees in Due North Inc. The average monthly salary of the middle level employees is ₹ 5,500 and that of the senior level employees is ₹ 14,000. If the average monthly salary of all these employees is ₹ 8,687.5, find the total number of employees in the company, if middle and senior level employees of Due North Inc. form 80% of their total employees.
(a) 175 (b) 200
(c) 220 (d) 250
112. What per cent selling price would be 34% of the cost price if the gross profit is 26% of the selling price?
(a) 74.00% (b) 25.16%
(c) 17.16% (d) 88.40%
113. A cistern, open at the top, is to be lined with sheet lead which weights 27 kg/m³. The cistern is 4.5 m long and 3 m wide, and holds 50 m³. The weight of lead required is
(a) 1764.60 kg (b) 1864.62 kg
(c) 1660.62 kg (d) 1860.62 kg
114. Only one bomb is needed to destroy a bridge and there are three bombers engaged in an attempt to destroy the bridge. The probabilities of the bombers hitting the bridge are respectively 0.3, 0.4 and 0.7. What is probability of the bridge being destroyed?
(a) 0.874 (b) 0.126
(c) 0.916 (d) 0.084
115. A and B walk around a circular track. They start at 8 am from the same point in the opposite directions. A and B walk at a speed of 2 rounds per hour and 3 rounds per hour respectively. How many times shall they cross each other before 9:30 am?
(a) 6 (b) 5
(c) 7 (d) 8
116. One hundred men in 10 days do onethird of a piece of work. The work is then required to be completed in another 23 days. On the next day (the eleventh day) 50 more men are employed, and on the day after that, another 50. How many men must be discharged at the end of the 18th day so that the rest of the men, working for the remaining time, will just complete the work ?
(a) 100 (b) 105
(c) 110 (d) 115
117. Two people A and B start from P and Q (distance = D) at the same time towards each other. They meet at a point R, which is at a distance 0.4 D from P. They continue to move to and fro between the two points. Find the distance from point P at which the fourth meeting takes place.
(a) 0.8 D (b) 0.6 D
(c) 0.3 D (d) 0.4 D
118. The horizontal distance between two towers is 60 m. The angular elevation of the top of the taller tower as seen from the top of the shorter one is 30°. If the height of the taller tower is 150 m, the height of the shorter one is
(a) 100m (b) 106m
(c) 116m (d) None of these
119. The average of marks obtained by 120 candidates in a certain examination is 35. If the average mark of passed candidates is 39 and that of the failed candidates is 15, what is the number of candidates who passed the examination?
(a) 90 (b) 85
(c) 100 (d) 120
120. A cistern contains 50 L of water. 5 L of water is taken out of it and replaced with wine. The process is repeated again. Find the proportion of wine and water in the resulting mixture.
(a) 1 : 4 (b) 41 : 50
(c) 19 : 81 (d) 81 : 19

SECTION-D : Data Analysis & Sufficiency

DIRECTIONS (Qs.121-125): Study the following table to answer these questions.

The following table gives the number of candidates Appeared (App.) and Qualifies (Quali.) in ABC entrance examination from different zones (I - IV in different years from 2006 - 2011)

Zone	I		II		III		IV		V		VI	
Year	App.	Quali	App.	Quali	App.	Quali	App.	Quali	App.	Quali	App.	Quali
2006	2989	575	2490	530	2540	430	2534	440	1008	130	2698	498
2007	2438	590	2899	520	2384	470	2653	450	1103	160	2798	610
2008	7534	608	2840	532	2053	502	2234	480	1143	190	2848	580
2009	6524	650	3600	560	2143	510	2468	500	1198	220	3008	490
2010	8746	632	3608	544	2340	544	2549	560	1208	240	2948	560
2011	8429	648	5432	612	2230	588	2630	580	1203	238	3048	534

121. The qualifying percentage from zone V is maximum in which of the following years?
 (a) 2010 (b) 2011
 (c) 2009 (d) 2006
122. The total number of qualifying candidates in 2009 is what per cent less than that in 2011?
 (a) 9.21% (b) 6.89%
 (c) 9.89% (d) 8.43%
123. Ratio between boys and girls for qualified and for appeared from zone IV in 2009 are 7 : 3 and 3 : 2 respectively. What is the approximate ratio between the boys qualified and girls appeared?
 (a) 2 : 13 (b) 13 : 19
 (c) 1 : 28 (d) 1 : 50
124. In which of the following zones is there a continuous increase in the number of students appeared as well as qualified over the years?
 (a) Zone II (b) Zone III
 (c) Zone IV (d) None of these
125. The number of students appeared from zone V in 2008 and 2011 together is approximately what per cent less than that from zone II in 2007 and 2010 together?
 (a) 64.4% (b) 50.2%
 (c) 55.6% (d) 60%
126. How much money did X invest
 I. An increase in the rate of interest from $4\frac{7}{8}\%$ to $5\frac{1}{8}\%$ per annum increases his yearly income by ₹ 25.
 II. The sum invested gets doubled, when invested at 8% annum for $12\frac{1}{2}$ yr.
127. What is the height of the triangle?
 I. The area of the triangle is 20 times its base.
 II. The perimeter of the triangle is equal to the perimeter of a square of side 10 cm.
128. A spherical ball of given radius x cm is melted and made into a right circular cylinder. What is the height of the cylinder?
 I. The volume of the cylinder is equal to the volume of the ball.
 II. The area of the base of the cylinder is given.
129. What is the speed of the train whose length is 210m?
 I. The train crosses another train of 300 m length running in opposite direction in 10s.
 II. The train crosses another train running in the same direction at the speed of 60 km/h in 30s.
130. What is the man's speed in still water?
 I. The speed of the stream is one-third of the man's speed in still water.
 II. In a given time, the man can swim twice as far with the stream as he can against it.

DIRECTIONS (Qs.126-130): Each of these questions consists of a question and two Statements I and II.

Decide whether the data provided in the statements are sufficient to answer the question.

Give answer :

- (a) If the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question
- (b) If the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question
- (c) If the data in both Statements I and II are required to answer the question
- (d) If the data in both Statements I and II together are not sufficient to answer the question

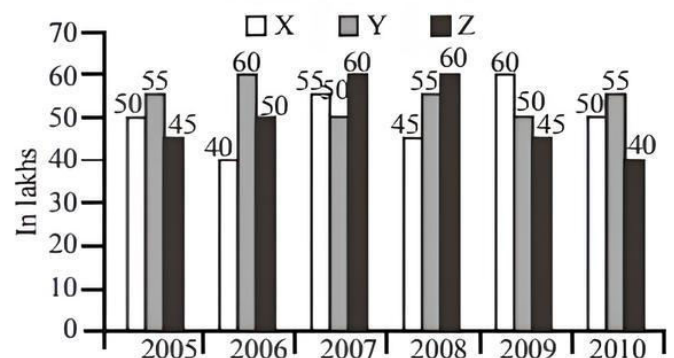
126. How much money did X invest

I. An increase in the rate of interest from $4\frac{7}{8}\%$ to $5\frac{1}{8}\%$ per annum increases his yearly income by ₹ 25.

DIRECTIONS (Qs. 131-135): Study the graph to answer these questions.

An ice-cream company prepares three different flavours X, Y and Z. The production of the three flavours over a period of six years has been expressed in the bar graph provided below.

Production of three different flavours of ice-creams X, Y and Z by a Company over the years



131. For which of the following years the percentage of rise/fall in production from the previous year is the maximum for the flavour Y ?
- (a) 2007 Decrease (b) 2008 Increase
(c) 2009 Decrease (d) 2010 Increase
132. For which flavour was the average annual production maximum in the given period?
- (a) For X (b) For Y
(c) For Z (d) Both for X and Y
133. What is the difference between the average production of flavour X in 2005, 2006 and 2007 and the average production of flavour Y in 2008, 2009 and 2010?
- (a) 500000 (b) 25000
(c) 240000 (d) 80000
134. Which year shows the highest production of ice-creams?
- (a) 2005 (b) 2007
(c) 2009 (d) 2010
135. The total production of ice-creams in 2009 is what per cent of the total production of ice-cream flavours Y and Z in 2005 and 2007 combined?
- (a) 14.50% (b) 80.25%
(c) 65.12% (d) 73.80%

DIRECTIONS (Qs. 136-140) : In each of these questions two Quantities A and B are given. Compare the two quantities.

Give answer :

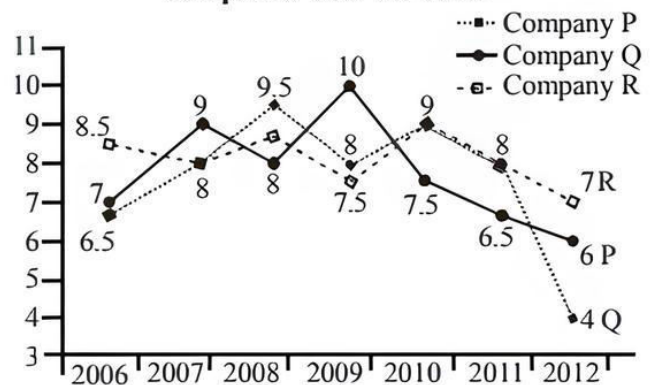
- (a) If Quantity A is greater than Quantity B
(b) If Quantity B is greater than Quantity A
(c) If Quantities A and B are equal
(d) If comparison cannot be made
136. In a leap year there are 366 days, whereas in a non-leap year there are 365 days.
- A. The probability of encountering 54 Tuesdays in a leap year.
B. The probability of encountering 53 Tuesdays in a non-leap year.
137. Amit has sold a book at a profit of 20% which cost him ₹ 56.25. Rita has sold a book at a loss of 5% which cost her ₹ 80.40.
- A. The selling price of book which Amit sold.
B. The selling price of book which Rita sold.
138. If 5 people are transferred from Z to Y , further 5 more people are transferred from Y to X , then 5 are transferred from X to Y and finally, 5 more are transferred from Y to Z .
- A. The maximum possible average of class Y .
B. The maximum possible average of class X .
139. 19 yr from now Thomas will be three times as old as Tim is now. Tom is 3 yr younger than Thomas.
- A. Tom's age now.
B. Tim's age now.
140. Last week Mohit received ₹ 10 in commission for selling 100 copies of a magazine. Last week Manish sold 100 copies of this magazine. He received his salary of ₹ 5 per week plus a commission of 2 paise for each of the first 25 copies sold, 3 paise for each next 25 copies and 4 paise for each copy sold thereafter.

- A. Mohit's commission in the last week.
B. Manish's total income for last week.

DIRECTIONS (Qs.141-145) : Study the following graph to answer these questions.

Three different finance companies declare fixed annual rate of interest on the amounts invested with them by investors. The rate of interest offered by these companies may differ from year to year depending on the variation in the economy of the country and the banks' rate of interest. The annual rate of interest offered by the three companies P , Q and R over the years are shown by the line-graph provided below.

Annual Rate of Interest Offered by three Finance Companies Over the Years

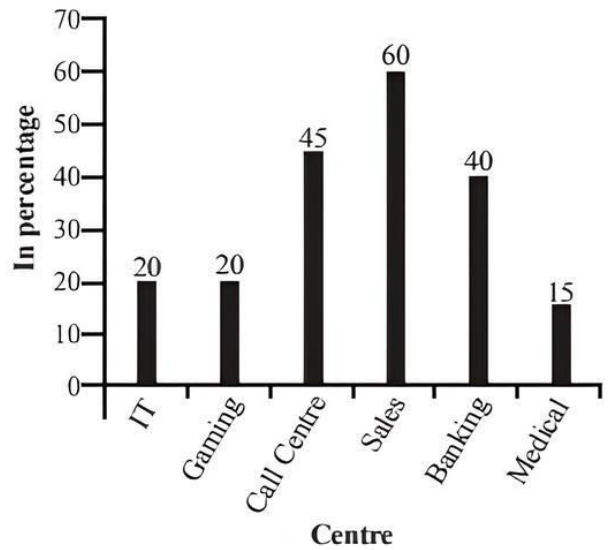
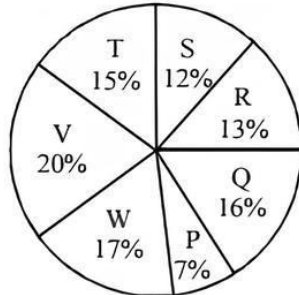
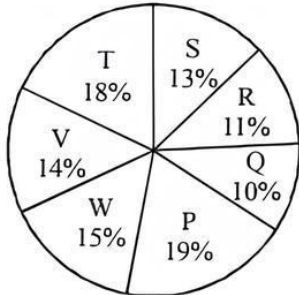


141. If two different amounts in the ratio 8 : 9 are invested in companies P and Q respectively in 2012, then the amounts received after one year as interests from companies P and Q respectively are in the ratio
- (a) 2 : 3 (b) 3 : 4
(c) 6 : 7 (d) 4 : 3
142. If company P invested ₹ 100000 and company Q invested ₹ 500000 in the year 2007, then what is the difference between their actual interest earned (in ₹).
- (a) 28500 (b) 37000
(c) 9500 (d) 10000
143. An investor invested a sum of ₹ 15 lakh in company P in 2008. The total amount received after one year was reinvested in the same company for one more year. The total appreciation received by the investor on his investment was
- (a) ₹ 282000 (b) ₹ 249600
(c) ₹ 216000 (d) ₹ 225600
144. In 2010, if ₹ 35 lakh were invested in companies P , Q and R for one year in the ratio 2 : 1 : 4, then what was the total interest earned in that year?
- (a) ₹ 1,54,500 (b) ₹ 2.57 lakh
(c) ₹ 3.12 lakh (d) ₹ 2.48 lakh
145. The average annual rate of interest offered for the given period is highest for
- (a) company P (b) company Q
(c) company R (d) Cannot be determined

DIRECTIONS (Qs.146-150): The following pie charts show the distribution of students of graduate and post-graduate levels in seven different institutes namely P, Q, R, S, T, V and W.

Total Number of Students of Graduate Level = 25400

Total Number of Students of Post-Graduate Level = 18600



146. What is the total number of students studying at post-graduate and graduate levels in institute S?
 (a) 5534 (b) 5084
 (c) 5764 (d) 5246
147. What is the nearest ratio between the number of students studying at post-graduate and graduate levels in institute R?
 (a) 6 : 7 (b) 3 : 4
 (c) 4 : 5 (d) 13 : 15
148. What is the nearest ratio between the number of students studying at post-graduate level in institute V and graduate level in institute T?
 (a) 8 : 9 (b) 4 : 5
 (c) 6 : 7 (d) 3 : 4
149. How many students of institutes P and W are studying at graduate level?
 (a) 7486 (b) 8636
 (c) 9046 (d) 9256
150. Total number of students studying at post-graduate level from institutes T and V is
 (a) 6070 (b) 6890
 (c) 6510 (d) 6230

DIRECTIONS (Qs.151-155) : Study the following graphs to answer these questions.

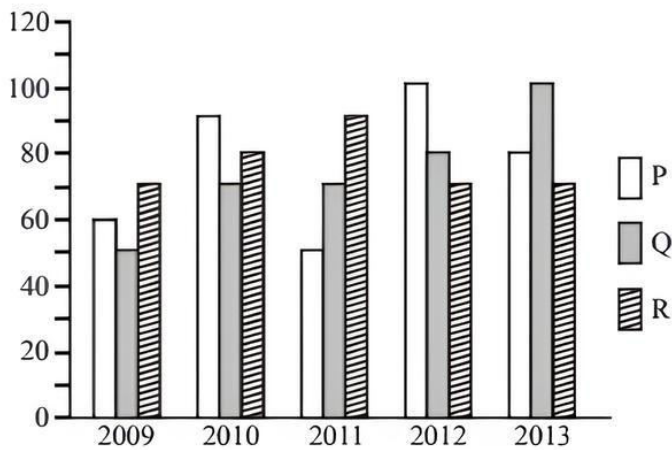
The following pie chart gives the percentage of adults from various industries working in night shifts. The bar graph shows the percentage of females from these industries working in night shifts.

Total number of People = 40250



151. What is the approximate average number of females working in night shifts in all the industries?
 (a) 2227 (b) 4481
 (c) 3326 (d) 2523
152. The number of females working in night shifts in the gaming industry is what per cent of the total number of people working in the night shifts from all the industries taken together?
 (a) 5.6 (b) 3.6
 (c) 3.2 (d) 4.4
153. What is the difference in percentage of males and females working in night shifts in these industries?
 (a) 33.2 (b) 23.8
 (c) 33.6 (d) None of these
154. If the number of females working in night shifts in banking were 3206, while the number of females in rest of the industries remained unchanged, the new percentage of females working in night shifts will be _____. (assume that the total number of people working in night shifts remains constant)
 (a) 35.56% (b) 33.72%
 (c) 23.82% (d) Cannot be determined
155. Percentage of males working in night shifts is lowest in which of the following industries?
 (a) Sales (b) IT and Medical
 (c) Banking (d) Gaming

DIRECTIONS (Qs. 156-160): The following bar graph indicates the production of sugar (in lakh tonnes) by three different sugar companies P, Q and R over the years 2009 to 2013.



156. The percentage increase in production of Company Q from the year 2009 to the year 2013 is
 (a) 80% (b) 90%
 (c) 60% (d) 100%
157. The average production over the years 2009-2013 was maximum for the company(ies)
 (a) Q (b) P
 (c) R (d) P and R
158. The percentage rise or fall in production of Company Q as compared to the previous year is the maximum in the year
 (a) 2011 (b) 2010
 (c) 2013 (d) 2012
159. The percentage of production of Company R to production of Company Q is the maximum in the year
 (a) 2010 (b) 2009
 (c) 2011 (d) None of these
160. The ratio of the average production of Company P during the years 2011 to 2013 to the average production of Company Q for the same period is
 (a) 23 : 25 (b) 27 : 29
 (c) 15 : 17 (d) 9 : 11

SECTION-E : Indian & Global Environment

161. What is the total length of the Chennai-Andaman and Nicobar Island Submarine Cable System inaugurated by Prime Minister on 10th August, 2020?
 (a) 3500 KM (b) 2700 KM
 (c) 2500 KM (d) 2300 KM
162. Which state in January, 2020 announced establishment of three separate capitals?
 (a) Himachal Pradesh (b) Uttarakhand
 (c) Andhra Pradesh (d) Arunachal Pradesh
163. Which among the following natural site has been made open for tourism by Government of India?
 (a) Mountain Nanda Devi
 (b) Gangotri glacier
 (c) Mountain Kanchenjunga
 (d) Siachen glacier

164. Who has been appointed as new Comptroller and Auditor General of India?
 (a) Manoj Sinha (b) Pradeep Kumar Joshi
 (c) GC. Mummu (d) Sanjay Kothari
165. The first farmer train inaugurated by Union Agriculture Minister on 7th August, 2020 will run between which of the following stations?
 (a) Devlali to Danapur
 (b) Baurani to Tatanagar
 (c) Varanasi to Kolkata
 (d) Ghazipur to Durgapur
166. Which among the following campaign has been launched by Government of India to raise awareness on fuel conservation?
 (a) Sarthak (b) Lakshya
 (c) Saksham (d) Yuva
167. India has built the Supreme Court of which country?
 (a) Mauritius (b) Maldives
 (c) Sri Lanka (d) Nepal
168. Who among the following has been awarded with Indira Gandhi Peace Prize?
 (a) M.S. Swaminathan
 (b) Ell Bhat
 (c) Ellen Johnson Sirleaf
 (d) David Attenborough
169. International Food Safety Day is observed every year on
 (a) 22nd March (b) 22nd May
 (c) 7th June (d) 5th June
170. Which of the following country topped the World Bank's Human Capital Index 2020?
 (a) Sweden (b) Singapore
 (c) Switzerland (d) United States
171. In which of the following cities the 17th edition of BIO ASIA 2020 was held?
 (a) Hyderabad (b) Bengaluru
 (c) New Delhi (d) Chennai
172. The first India-Africa Defense Ministers Conclave, 2020 was organised in
 (a) Cape Town (b) Lucknow
 (c) Nairobi (d) New Delhi
173. Which among the following tech giant has launched Project Re Weave in India to empower the artisan engaged in textile industry?
 (a) Google (b) Microsoft
 (c) Facebook (d) Amazon
174. Who among the following has been appointed as Prime Minister of Lebanon in August 2020?
 (a) Mustapha Adib (b) Mohamed Ould Bilal
 (c) Mohamed Irfaan Ali (d) Hamed Bakayoko
175. Who among the following has written the book Swachh Bharat Revolution?
 (a) Vikram Chandra (b) Narsingh Subramaniam
 (c) Parameswaran Iyer (d) Monika Arora

176. Which company won tax case against India at International Arbitration Tribunal?
 (a) Idea (b) Vodafone
 (c) Airtel (d) Reliance
177. What is the name of main festival celebrated by Bhutia tribe of Sikkim?
 (a) Hornbill (b) Hega
 (c) Aoleang (d) Losoong
178. Which among the following writer has been awarded with 29th Saraswati Samman?
 (a) Mahabaleshwar Sail
 (b) Vinod Chaudhary
 (c) Vasudev Mohl
 (d) Nand Kishor Acharya
179. The National Museum on Ganga River is at
 (a) Haridwar (b) Varanasi
 (c) Prayagraj (d) Patna
180. The discovery of Phosphine gas on which planet provides possible signs of life?
 (a) Mars (b) Jupiter
 (c) Venus (d) Saturn
181. Which of the following scheme has been launched by Union HRD minister to provide internship and skill development support to the youths in urban area?
 (a) Laqshya (b) Garima
 (c) Rise (d) TULIP
182. Which among the following was winner of 2020 Australian open in men's single category?
 (a) Rafael Nadal (b) Roger Federer
 (c) Novack Djokovic (d) Dominic Thiem
183. The Ministry of Transportation has extended the validity of fitness certificates, driving license and other vehicle documents till
 (a) 31st March, 2021 (b) 31st December, 2020
 (c) 31st March, 2022 (d) 31st December, 2021
184. Who among the following has sworn-in for a fifth term as Prime Minister of Israel on 17th May, 2020?
 (a) Benjamin Netanyahu
 (b) Benny Gantz
 (c) Petro Poroshenko
 (d) James Packer
185. What is the rank of India among the countries in Press Freedom Index, 2020 launched by NGO 'Reporters without Borders'?
 (a) 138 (b) 142
 (c) 133 (d) 144
186. Recently, Ebrahim Alkazi died due to old age ailments and cardiac arrest. With which profession he was associated?
 (a) Science (b) Music
 (c) Dance (d) Theatre
187. T. S. Tirumurti has been appointed as the next Permanent Representative of India to
 (a) Food and Agricultural Organisation
 (b) World Trade Organisation
 (c) United Nations
 (d) International Maritime Organisation
188. What is the name of the App developed by school going girl of Noida, which won 'tech prize' in United States?
 (a) KUSUM (b) SAATHJ
 (c) RAKSHM (d) MAITRI
189. Which among the following was venue of Khelo India Youth Games?
 (a) New Delhi (b) Guwahati
 (c) Hyderabad (d) Pune
190. Who was Chairman of the Expert Committee constituted by the Ministry of Electronics and Information Technology to study various issues relating to non-personal data which submitted its report in July, 2020?
 (a) Kris Gopalakrishnan (b) B.N. Shrikrishna
 (c) Injeti Srinivas (d) Rajiv Kumar
191. Which among the following cities has been awarded best megacity in innovation and best practices in Swachh Survekshan 2020?
 (a) New Delhi (b) Bengaluru
 (c) Chennai (d) Kolkata
192. Dharma Guardian is military exercise between which of the following countries?
 (a) India and Japan (b) India and France
 (c) India and Sri Lanka (d) India and Russia
193. Name the Indian cricketer who has been awarded with Rajiv Gandhi Khel Ratna Award for 2020?
 (a) Virat Kohli (b) MS Dhoni
 (c) R Ashwin (d) Rohit Sharma
194. Which among the following bank had launched Gram Sampark Abhiyan to promote financial inclusion?
 (a) State Bank of India
 (b) Canara Bank
 (c) Punjab National Bank
 (d) HDFC Bank
195. What was the theme of 13th Conference of the parties to the Convention on the Migratory Species of Wild Animals (CMS CoP) which was held on 15th to 22nd February at Gandhinagar, Gujarat ?
 (a) Migratory Species Connect the Planet and Together We Welcome Them Home
 (b) Their Future is Our Future-Sustainable Development for Wildlife and People
 (c) Sustainable World includes Equal Treatment to Wildlife
 (d) Sustainable Wildlife is our Common Goal
196. Which State Government has launched "Digital Seva Setu Programme" for rural areas?
 (a) Assam (b) Gujarat
 (c) West Bengal (d) Odisha
197. What is the name of project launched by Nasa which aims to build a base camp on the Moon's South Pole?
 (a) Project Insight (b) Project Kepler
 (c) Project Nemo (d) Project Artemis
198. Which scheme has been funded by World Bank and the Government of India to improve the quality and governance of school education in six Indian states?
 (a) STARS (b) TULIP
 (c) SANKALP (d) KIRAN

199. Name the mission launched by India to repatriate Indian citizens from overseas by sea during covid-19 pandemic?
- Operation Samudra Setu
 - Operation Samudra Manthan
 - Operation Samudra Sewa
 - Operation Samudra Rakshak
200. Which financial institution has released guidelines for 'Fair Practices Code' for Asset Reconstruction Companies (ARCs)?
- Department of Revenue Intelligence
 - Securities Exchange Board of India
 - NITI Aayog
 - Reserve Bank of India

HINTS & EXPLANATIONS

- (b) **“Buddhist economists focus on sustainability”** is the correct answer; refer to line “.....From a Buddhist point of view of course this will not do, the essential difference between non-renewable fuels like coal and oil on the one hand and renewable fuels like wood and water power on the other cannot be simply overlooked. Non-renewable goods must be used only if they are indispensable, and then only with the greatest care and the highest concern for conservation....”
- (a) **“measuring everything in terms of money”** is the correct answer; refer to line “.....Modern economies do not differentiate between renewable and non-renewable materials, as its method is to measure everything by means of a money price..... The cheapest is automatically the one to be preferred, as to do otherwise would be irrational and ‘uneconomic’. From a Buddhist point of view of course this will not do,....”
- (c) **“underline the need for conserving natural resources.”** is the correct answer;
- (d) **“there is no alternative fuel available”** is the correct answer; refer to line “....Non-renewable goods must be used only if they are indispensable, and then only with the greatest care and the highest concern for conservation.....”
- (b) **“compulsion is reduced to minimum and they are agreeable”** is the correct answer; refer to line “...There are forms of work, of course, which since external compulsion is reduced to a minimum, are hardly to be differentiated from occupation.
The artist, the imaginative writer, the scientist, the social worker, for instance, find their pleasure in the constant spontaneous exercise of creative energy and the essential reward of their work is in the doing of it....”
- (d) **“a desire to do something which requires initiative and doing it at will and pleasure.”** is the correct answer.
- (c) **“work has obvious utility and brings tangible rewards, while occupation is an end in itself.”** is the correct answer; refer to line “....Work has for him obvious utility, and it brings the satisfaction of tangible rewards. Whereas occupation is an end in itself, and we therefore demand that it shall be agreeable ...”
- (b) **“occupation saves an average person from the mental stress involved in devising outlets for his energy”** is the correct answer; refer to line “....For the average person the element of necessity in work is valuable, for he is saved the mental stress involved in devising outlets for his energy. Work has for him obvious utility, and it brings the satisfaction of tangible rewards.....”
- (d) **“the mixing up of word sequence in the computer can result in poetry”** is the correct answer; refer to line “.....Furthermore, brains and computers can both be organised so as to solve problems. The mode of communication is very similar in both the cases, so much so that computers can now be designed to generate artificial human speech and even, by accident, to produce sequences of words which human beings recognise as poetry.....”
- (c) **“the process of organising and communicating are similar in both cases.”** is the correct answer; refer to line “....brains and computers can both be organised so as to solve problems. The mode of communication is very similar in both the cases, so much so that computers can now be designed to generate artificial human speech.....”
- (c) **“mechanical”** is the correct answer; Refer to line “.....some very useful analogies can be drawn between the relational systems of computer mechanism and the relational systems of brain mechanism....”
- (b) **“methods of communication”** is the correct answer; refer to line “....The mode of communication is very similar in both the cases...”
- (d)
- (a) “when people started to farm, kinship became less important.” is not true, instead of this, “when people started to farm their universe remained centred on kinship”.

15. (c) **“a newspaper article that focuses on the changes in kinship patterns and the effects of those changes on individuals”.**
16. (a) **“smaller families are more autonomous and influential”** is the correct answer; refer to line “.....European lines-a process of fragmentation has been going on. The ties and the demands of kinship have been weakening, the family has been getting smaller and, some say, less influential, as the individual, with a new sense of autonomy and with new obligations to self has come to the foreground.....”
17. (a) **“far-ultraviolet spectrum”** is the correct answer; refer to line “....The astronomer must content himself with studying radiation emitted or reflected from celestial bodies. Second, from the Earth’s surface these are viewed through a thick atmosphere that completely absorbs most radiation except within certain ‘windows’, wavelength regions in which the radiation can pass through the atmosphere relatively freely in the optical, near-infrared, and radio bands of the electromagnetic spectrum; and even in these windows the atmosphere has considerable effects. For light, these atmospheric effects are as follows: (1) some absorption that dims the radiation, even in a clear sky; (2) refraction, which causes slight shift in the direction so that the object appears in a slightly different place; (3) scintillation i.e.,.....”
18. (d) **“clouds from volcano eruptions”** is the correct answer; refer to line “...these atmospheric effects are as follows: (1) some absorption that dims the radiation, even in a clear sky; (2) refraction, which causes slight shift in the direction so that the object appears in a slightly different place; (3) scintillation i.e., fluctuations in brightness of effectively point-like sources such as stars, fluctuations that are, however, averaged out for objects with larger images, such as planets; (4) image movement because of atmospheric turbulence which spreads the image of a tiny point over an angle of nearly one arc second or more on the celestial sphere (one arc second equals $1/3,600$ degrees); and (5) background light from the night sky.....”
19. (c) **“to neutralise the effect of diurnal spinning”** is the correct answer; refer to line “.....Ground-based telescopes use a mounting that makes it possible to neutralise the rotation of Earth relative to the stars; with an equatorial mounting driven at a proper speed, the direction of the telescope tube can be kept constant for hours while the Earth turns under the mounting....”
20. (b) **“can have uncertain rates”** is the correct answer; refer to line “....nutate or wobble slightly in a period of 18.6 years. The Earth’s rotation and orbital motion provide the basic standard of directions of stars, so that the uncertainties in the rate of these motions can lead to quite small but important uncertainties in measurements of stellar movements....”
21. (c) **“meagre, poverty”** fits the blanks appropriately; **meagre-** too small in amount; **Indulgent-** allowing somebody to have or do whatever he/she wants
Desolation- the state of being deserted or ruined Photos showed the desolation left by the fire.
Meticulous- giving or showing great attention to detail; very careful
22. (a) **“unsuited, submission”** fits the blanks appropriately; **unsuited-** not right or appropriate.
Odious- extremely unpleasant
Intimidation- to make timid or fearful: frighten especially
Dichotomy- the separation that exists between two groups or things that are completely opposite to and different from each other
Inherent- that is a basic or permanent part of somebody/something and that cannot be removed
Fabrication- the process of constructing products by combining typically standardised parts using one or more individual processes.
23. (b) **“applaud, criticising”** fits the blanks appropriately; **Subjugating-** to defeat somebody/something and make them obey you; to gain control over somebody/something.
24. (d) **“triumvirate”** is the correct answer;
Trio- a musical composition for three voice parts or three instruments
Tritium- Tritium (abbreviated as $3H$) is a hydrogen atom that has two neutrons in the nucleus and one proton. Tritium is produced naturally in the upper atmosphere when cosmic rays strike nitrogen molecules in the air. Tritium is also produced during nuclear weapons explosions, and as a by product in nuclear reactors.
Trivet- an iron tripod or bracket for a cooking pot or kettle to stand on.
25. (b) **“ineffable”** is the correct answer;
Miraculous- completely unexpected and very lucky.
Stupendous- very large or impressive.
Appalling- to shock somebody very much.
26. (b) **“a man of no substance”** is the correct answer.
27. (a) **“a private end to serve”** is the correct answer.
28. (a) **“had not influence on me”** is the correct answer.
29. (b) **BEACD is the logical order;** D perfectly concludes the passage evident from “broadly speaking”, B appropriately initiates the passage by talking about seasons and phenomenon in a year, followed by E, A and C as they further talk about the seasons and phenomenon.
30. (a) **ACEBD is the logical order;** A appropriately initiates the passage by talking about a rock garden, C, E and

B further tells us the specification following A and followed by D.

31. (b) ABCDE is the logical order.
32. (b) **“assembly”** is the correct answer;
Split- to divide or to make a group of people divide into smaller groups
Parfait- a flavoured custard containing whipped cream and syrup frozen without stirring.
Cleft- a natural opening or crack, especially in rock or in a person’s chin.
33. (a) **“harshness”** is the correct answer;
Leniency- the fact or quality of being more merciful or tolerant than expected; clemency.
Clemency- kindness shown to somebody when he/she is being punished
34. (c) **“unattractive”** is the correct answer;
Comely- pleasant to look at; attractive.
35. (d) **“bound”** is the correct answer; meaning- certain to do something
Vague- not clear or definite
Circumscribe- restrict (something) within limits.
36. (a) **“convincing”** is the correct answer;
Muddled- to confuse somebody.
Cogent- strongly and clearly expressed in a way that influences what people believe.
37. (b) **“hackneyed”** is the correct answer; meaning- boring because it has been used too often
Trite- boring and dull because it has been used or expressed many times before; not original
38. (b) here the error lies in (b) part, **‘if i was’** should be used in place of **‘if i am’** to make the sentence grammatically correct.
39. (b) **‘is situated’** should be used in place of **‘is situating’** to make the sentence grammatically correct.
40. (d) no error.

Solutions (41-43) :

From the given information, we get that

Days	Cities
Monday	Delhi
Tuesday	Hydrabad
Wednesday	Mumbai
Thursday	Bhopal
Friday	Jaipur
Saturday	Kolkata

41. (a) Mr. X visited Bhopal on Thursday.
42. (c) Between visit to Delhi (on Monday) and Bhopal (on Thursday), there is a gap of two days.
43. (b) Bhopal is visited on Thursday.
44. (a) Polished rice only contains starch, but unpolished rice contains bran and germ which is rich in vitamins and minerals.

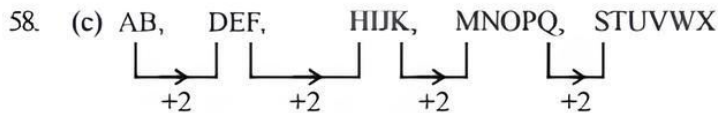
45. (a) Here reason (R) is the correct explanation of the assertion (A). Haemoglobin is a red pigment and due to its presence in the blood, its colour is red.
46. (b) President is the constitutional head of the state. President, Lok-sabha and Rajya-sabha consists the parliament. Here both (A) and (R) are correct, but (R) does not correctly explain (A).
47. (c) National Science Day is celebrated on 28 Feb each year. Famous scientist C.V. Raman was born on 7th November 1888.

Solutions (48-50) :

From given information, we get that :

Box	Number of shirts
P	50
U	66
T	41
R	90
Q	46
S	56

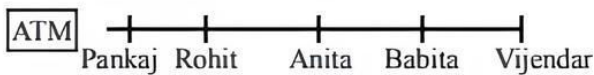
48. (b) Total shirts in U and Q = 66 + 46 = 112.
49. (c) Three box - T, R and Q.
50. (a) Total shirts in top (P) and bottom box (S) = 50 + 56 = 106
51. (c) Kolkata, Mumbai, Mangalore and Cochin are port cities in India.
52. (d) Bhilai, Durgapur, Bokaro and Rourkela are well known cities for their steel plants.
53. (b) Apostate is one who renounces religion, like that traitor is one who betrays his country.
54. (a) $9 : 50 :: 20 : 105$
 $\frac{9 \times 5 + 5}{20 \times 5 + 5}$
55. (b) $C-3, E-5, G-7, I-9, K-11, M-13$
 $\frac{C-3}{+2}, \frac{E-5}{+2}, \frac{G-7}{+2}, \frac{I-9}{+2}, \frac{K-11}{+2}, \frac{M-13}{+2}$
56. (c) $P 3 C, R 5 F, T 8 I, V 12 L, X 17 O$
 $\frac{P 3}{+2}, \frac{C 5}{+3}, \frac{R 8}{+4}, \frac{F 12}{+5}, \frac{T 17}{+2}, \frac{I 20}{+3}, \frac{V 25}{+4}, \frac{L 30}{+5}, \frac{X 35}{+2}, \frac{O 40}{+3}$
57. (a) $A \xrightarrow{+2} C \xrightarrow{+2} E \xrightarrow{+2} G$
 $B \xrightarrow{+2} D \xrightarrow{+2} F \xrightarrow{+2} H$
 $P \xrightarrow{+1} Q \xrightarrow{+1} R \xrightarrow{+1} S$



59. (c) The pattern of the series is
 abc / aabc / aabbc / aabbcc / aaabbcc
 Here, each next letter is increases by 1 in number.

60. (c) acbd / cadb / acbd
 The pattern of the series is :
 acbd / cadb / acbd

61. (d) Position of 5 persons in a queue is like this.



∴ Anita is at third position from front.

62. (c) When clock indicate 24 hr 10 min., correct time would be = 24 hr.

$$\text{Now, } \left(24\text{hr} + \frac{10}{60}\text{hr} \right) = 24\text{ hr is correct time.}$$

$$\frac{145}{6}\text{ hr} = 24\text{ hr is correct time.}$$

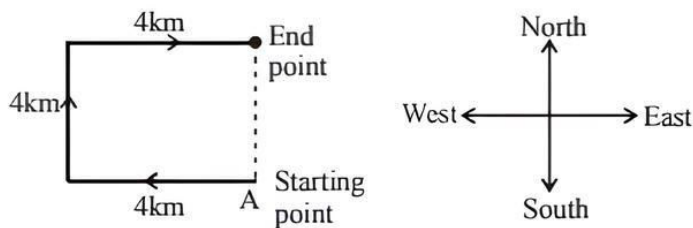
Time interval between 8 a.m. and 1 p.m. of following day = 24 + 5 = 29 hours.

∴ When clock shows 1 P.M.

$$\text{then, correct time} = \frac{24}{145} \times 6 \times 29 = 28\text{ hr. } 48\text{ min.}$$

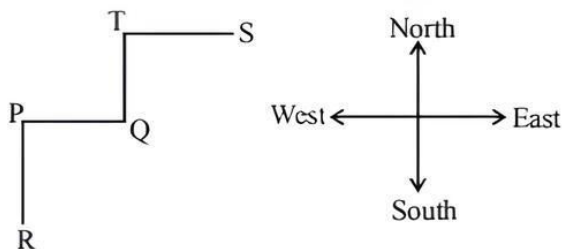
Hence, correct time would be 48 min past 12 pm.

63. (a)



He is in North direction from starting point.

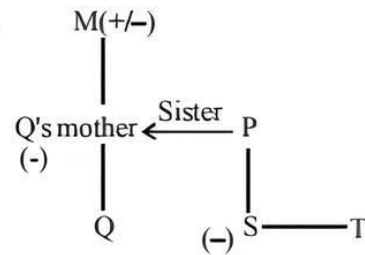
64. (c)



Hence, 'R' is in south-west of 'S'.

65. (c) Woman is the sister of that man and that man's father is the only son of his grand father.

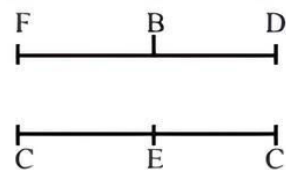
66. (d)



M is grand-father or grand-mother of T.

67. (a) Lady is the mother of that man.

68. (b) Sitting of six persons in two rows are like this



'E' is sitting opposite for B.

69. (b) Only course of action II follows.

Management should involve experienced people for the systematic restructuring of the organisation.

70. (d) Here, both course of actions I and II follows.

People should be aware about the eminent danger over the radio/television. The silt and mud from to river bed should be cleared immediately after receding of the water level.

71. (c) Only course of action III follow. We should focus on improving diplomatic relations.

72. (d) Mahesh's rank from the top.
 $= 42 - 16 + 1 = 27^{\text{th}}$

73. (c) Arun's position from bottom
 $= 31 - 7 + 1 = 25^{\text{th}}$
 Vinay's position from bottom
 $= 31 - 11 + 1 = 21^{\text{st}}$

74. (c) From given information, we get that
 Mohan > Kamal > Arun > Sachin > Ram
 Hence, second tallest is Kamal.

75. (d)

Letter	A	Q	F	J	L	D	M	P	N
Code	1	3	4	7	9	2	5	6	8

Hence, '396824' is the code of 'LPNDF'.

76. (b) C A L A N D E R
 ↓ ↓ ↓ ↓ ↓
 C L A N A E D R
 Similarly,
 C I R C U L A R
 ↓ ↓ ↓ ↓ ↓
 C R I U C A L R

77. (a)

Letter	E	N	G	L	A	N	D	F	R	C
Code	1	2	3	4	5	2	6	7	8	9

Hence,

G	R	E	E	C	E
3	8	1	1	9	1

78. (c) Shoe is made by the leather, like that Highway is made by Asphalt.
 79. (a) Condone and Offence are contradictory relationship, like that overlook and aberration.
 80. (c) Dinosaur and Dragon belong to the same category. Similarly, snow and ice belong to the same category.
 81. (c) 15 men + 24 women + 36 boys complete work in 12 days working 8 hours per day.
 15 men = 24 women = 36 boys.

$$\therefore 12 \text{ women} = \frac{15}{2} \text{ men and } 6 \text{ boys} = \frac{15}{6} \text{ men.}$$

Now, 12 women + 6 boys

$$= \left(\frac{15}{2} + \frac{15}{6} \right) \text{ men} = \frac{60}{6} = 10 \text{ men.}$$

\therefore Number of men required

$$= \frac{9}{4} \times \frac{8}{6} \times \frac{12}{30} \times 15 = 18 \text{ men.}$$

Hence, extra number of men = 18 - 10 = 8 men.

82. (b) Let the first amount is ₹ x lent out of rate 6%
 Then, second amount
 = (38800 - x) lent out at rate 5%

$$\therefore \frac{x \times 6 \times 6}{100} : \frac{(38800 - x) \times 5 \times 2}{100} = 5 : 4$$

$$18x : 5(38800 - x) = 5 : 4$$

$$\Rightarrow 72x = 25(38800 - x)$$

$$\Rightarrow 97x = 25 \times 38800$$

$$\Rightarrow x = \frac{25 \times 38800}{97} = 10000$$

Hence, second part = 38800 - 10000 = 28800.

83. (d) Amount (A) = ₹ 196, rate ($r\%$) = $16\frac{2}{3}\%$ = $\frac{50}{3}\%$ p.a.

Time (t) = 2 years, Principal (P) = ?

$$A = P \left(1 + \frac{r}{100} \right)^t$$

$$196 = P \left(1 + \frac{50}{3 \times 100} \right)^2$$

$$\Rightarrow 196 = P \left(1 + \frac{1}{6} \right)^2$$

$$\Rightarrow 196 = P \left(\frac{7}{6} \right)^2$$

$$\therefore P = \frac{196 \times 6 \times 6}{7 \times 7} = 144.$$

84. (a) Let loan at the ratio of 12% = $2x$.
 Then, loan at the rate of 14% = (1500 - x)
 Interest for 1 year = ₹ 186
 According to the question,

$$\frac{x \times 12 \times 1}{100} + \frac{(1500 - x) \times 14 \times 1}{100} = 186$$

$$12x + 1500 \times 14 - 14x = 18600$$

$$2x = 21000 - 18600 = 2400$$

$$x = \frac{2400}{2} = 1200$$

Hence, the loan is ₹ 1200 at the rate of 12%

85. (c) Suppose the price paid per trip by a passenger be ₹ a and auto rickshaw consumes b L petrol.

Total expenditure in a trip = $30 \times b = ₹ 30b$

Total earning in a trip = $3 \times a = ₹ 3a$

According to the question,

$$3a - 30b = 20\% \text{ of } 30b$$

$$\Rightarrow 3a - 30b = \frac{20 \times 30}{100} b \Rightarrow 3a - 30b = 6b$$

$$\Rightarrow 3a = 36b \therefore a = 12b$$

Now, the price of petrol are reduced to ₹ 24 and passenger taken by auto-rickshaw are four.

\therefore Total expenditure in a trip = $24 \times b = ₹ 24b$

Total earning in a trip = $4 \times a = ₹ 4a$

Profit per cent

$$= \frac{\text{Total earning} - \text{Total expenses}}{\text{Total expenses}} \times 100$$

$$= \frac{4a - 24b}{24b} \times 100$$

$$= \frac{4 \times 12b - 24b}{24b} \times 100 \quad [\because a = 12b]$$

$$= \frac{48b - 24b}{24b} \times 100$$

$$= \frac{24b}{24b} \times 100 = 100\%$$

86. (a) Let the carpenter increases the price K times, then the total increase in price would be ₹ 6 K

Also, the chair sold at increased price = $(40 - K)$
 To maximize the profit the selling price of chair with increase price must be greater than original selling price.

$$\begin{aligned} \therefore (156 + 6K)(40 - K) &> 156 \times 40 \\ \Rightarrow 156 \times 40 + 240K - 156K - 6K^2 &> 156 \times 40 \\ \Rightarrow 84K - 6K^2 &> 0 \end{aligned}$$

Differentiate the above equation and putting = 0
 $84 - 12K = 0 \Rightarrow 84 = 12K$

$$\therefore K = \frac{84}{12} = 7$$

To check, if value of K will maximize or not we will against differentiate the above equation and put the value of K and if the result is negative, then the profit is maximized and if positive, then profit is minimum

So, on differentiating $84 - 12K = -12$

So, the result is negative, hence the profit is maximum.

$$\begin{aligned} \text{The maximum selling price} &= 156 + 6 \times 7 \\ &= 156 + 42 = ₹198 \end{aligned}$$

87. (c) Suppose that the original price of petrol = ₹ P per gallon

After deduction, price of petrol

$$= ₹ P \times \frac{90}{100} = ₹ \frac{9P}{10}$$

Now, according to the question,

$$\frac{1800}{9 \times P} - \frac{1800}{P} = 5$$

$$\Rightarrow \frac{2000}{P} - \frac{1800}{P} = 5$$

$$\Rightarrow \frac{200}{P} = 5$$

$$\Rightarrow P = \frac{200}{5}$$

$$\therefore P = ₹40$$

Hence, original price of petrol = ₹40 per gallon

88. (d) Let the person's income = ₹ 100
 and savings = 6% of ₹100 = ₹ 6
 \therefore Expenditure = $100 - 6 = ₹94$
 = 2 yr. later, his income = $100 + 15\%$ of 100
 = $100 + 15 = ₹115$

Now, savings = ₹6

$$\therefore \text{Expenditure} = 115 - 6 = ₹109$$

So, percentage like in expenditure

$$= \frac{109 - 94}{94} \times 100\%$$

$$= \frac{15}{94} \times 100\% = 15.95\%$$

89. (b) Let the marked price on item = ₹ 100
 Discount allowed is 10% = ₹ 10
 \therefore Discounted price of item = $100 - 10 = ₹90$

$$\text{Sales tax} = 8\% \text{ of } ₹90 = \frac{90 \times 8}{100} = \frac{72}{10} = ₹7.20$$

$$\therefore \text{Total paid amount} = 90 + 7.20 = ₹97.20$$

When ₹ 97.20 is paid, then the marked price = ₹ 100

$$\text{and } ₹1 \text{ is paid, then the marked price} = ₹ \frac{100}{97.20}$$

when ₹ 680.40 is paid, then the marked price

$$= ₹ \frac{100}{97.20} \times 680.40$$

$$= ₹ \frac{100 \times 6804}{972} = ₹700$$

90. (b) **Petrol : Kerosene**

$$4 : 1$$

$$5 : 2$$

$$6 : 1$$

Total volume = L.C.M. of (4 + 1), (5 + 2) and (6 + 1)
 = L.C.M. of (5, 7, 7) = 35

Petrol : Kerosene

$$\text{Ist sol. } 4 \times \frac{35}{5} : 1 \times \frac{35}{5} = 28 : 7$$

$$\text{IInd sol. } 5 \times \frac{35}{7} : 2 \times \frac{35}{7} = 25 : 10$$

$$\text{IIIrd sol. } 6 \times \frac{35}{7} : 1 \times \frac{35}{7} = 30 : 5$$

In final sol.

Petrol : Kerosene

$$= (28 + 25 + 30) : (7 + 10 + 5)$$

$$= 83 : 22.$$

91. (a) Number of students qualifying the exam $400 \times 65\%$

$$= \frac{400 \times 65}{100} = 260$$

Number of girls = k (says)

and number of boys = $(1400 - k)$

$$\text{Now, cut off cleared by girls} = \frac{k \times 80}{100} = \frac{4k}{5}$$

and cut off cleared by boys

$$\frac{(400 - k) \times 60}{100} = \frac{1200 - 3k}{5}$$

$$\text{Now, } \frac{4k}{5} + \frac{1200 - 3k}{5} = 260$$

$$\Rightarrow \frac{4k + 1200 - 3k}{5} = 260 \Rightarrow k + 1200 = 1300$$

$$\Rightarrow k = 1300 - 1200 = 100$$

$$\therefore k = 100$$

Hence, one hundred girls appeared in the exam.

92. (c) The lock contains 4 rings, so any place can have number from 0 to 9.

Arrangement of 4 digits out of 10 digits, when repetition of digits are allowed.

\therefore Total ways to getting a code

$$= 10 \times 10 \times 10 \times 10 = 10^4$$

\therefore Maximum attempts before getting the right number is 1 less than total was *i.e.* $10^4 - 1$.

93. (a) From question, we have P_1 is always selected and hence P_4 and P_5 are not be included in the arrangement.

Now, person left = $10 - 3 = 7$

\therefore To select 4 persons from 7 persons

$$\text{Total ways} = {}^7C_4$$

Also, these 5 persons can be arranged in $5!$ ways.

\therefore Required ways of arrangement = ${}^7C_4 \times 5!$

94. (b) Let curved surface area of first cone is S_1 and curved surface area of second cone is S_2 .

As per question, $S_1 = 3S_2$

$$\Rightarrow \pi r_1 l_1 = 3(\pi r_2 l_2)$$

$$\Rightarrow r_1 l_1 = 3r_2 l_2$$

$$\Rightarrow r_1 l_1 = 3r_2 \times 3l_1$$

$$\Rightarrow r_1 l_1 = 9r_2 l_1$$

$$\therefore r_1 = 9r_2$$

Now, required ratio of base area

$$= \frac{\pi r_1^2}{\pi r_2^2} = \left(\frac{r_1}{r_2}\right)^2$$

$$= \left(\frac{9r_2}{r_2}\right)^2 = \left(\frac{9}{1}\right)^2 = \frac{81}{1} = 81 : 1$$

95. (d) Length, breadth and height = $3x$, $2x$ and x .

$$\text{Volume} = 3x \times 2x \times x = 1296$$

$$x = \sqrt[3]{\frac{1296}{6}} = 6.$$

Hence, breadth of the room = $8x = 8 \times 6 = 12$ m.

96. (a) When 7 cubes of side length 5 cm joined together, New length = $7 \times 5 = 35$ cm, breadth = 5 cm and height = 5 cm.

$$\text{New surface area} = 2 \times (lb + bh + lh)$$

$$= 2 \times (35 \times 5 + 5 \times 5 + 35 \times 5)$$

$$= 750 \text{ cm}^2$$

97. (c) Let the speed of faster swimmer be x km/h.

$$\text{Then, speed of slower swimmer} = \frac{75}{100} \times x$$

$$= \frac{3x}{4} \text{ km/h}$$

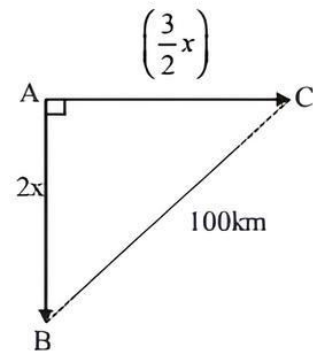
Now, in 2 hours distance covered by Faster swimmer = $2x$ km

$$\text{and slower swimmer} = \frac{3x}{4} \times 2 = \frac{3x}{2} \text{ km}$$

After, 2 hours the distance between them is 100 km.

Again, let $BC = 100$ km

$$AC = \frac{3}{2}x, AB = 2x$$



From the figure,

$$(AB)^2 + (AC)^2 = (BC)^2$$

$$\Rightarrow \left(\frac{3x}{2}\right)^2 + (2x)^2 = (100)^2$$

$$\Rightarrow \frac{9x^2}{4} + 4x^2 = 10000$$

$$\Rightarrow \frac{9x^2 + 16x^2}{4} = 10000$$

$$\Rightarrow \frac{25x^2}{4} = 10000$$

$$\Rightarrow x^2 = \frac{10000 \times 4}{25}$$

$$\therefore x = \sqrt{\frac{10000 \times 4}{25}} = \frac{100 \times 2}{5} = 40 \text{ km/h}$$

\therefore Speed of faster swimmer = 40 km/h

Note: Direction of faster swimmer can also be taken towards East.

98. (b) Suppose, the leak empty the cistern in time t h.

Then, due to leak time taken,

$$\frac{1}{(6+4)} = \frac{1}{t} = \frac{1}{6}$$

$$\Rightarrow \frac{1}{10} - \frac{1}{t} = \frac{1}{6}$$

$$\Rightarrow \frac{1}{t} = \frac{1}{6} - \frac{1}{10}$$

$$\Rightarrow \frac{1}{t} = \frac{10-6}{60} = \frac{4}{60}$$

$$\Rightarrow \frac{1}{t} = \frac{4}{60} = \frac{1}{15}$$

$$\Rightarrow \frac{1}{t} = \frac{1}{15}$$

$$\therefore t = 15 \text{ h}$$

99. (a) $(A+B)$'s one day work = $\frac{1}{5}$

$$\Rightarrow (A+B) = \frac{1}{5} \quad \dots(i)$$

And, from question,

$$2A + \frac{1}{2}B = \frac{1}{4} \quad \dots(ii)$$

On multiplying Eq. (i) by $\frac{1}{2}$, we get

$$\frac{1}{2}A + \frac{1}{2}B = \frac{1}{10} \quad \dots(iii)$$

On Eq. (iii) subtracted from Eq. (ii), we get

$$2A + \frac{1}{2}B = \frac{1}{4}$$

$$\frac{1}{2}A + \frac{1}{2}B = \frac{1}{10}$$

$$\hline$$

$$\left(2 - \frac{1}{2}\right)A = \frac{1}{4} - \frac{1}{10}$$

$$\Rightarrow \frac{3}{2}A = \frac{5-2}{20} \Rightarrow \frac{3}{2}A = \frac{3}{20} \Rightarrow \frac{A}{2} = \frac{1}{20}$$

$$\therefore A = \frac{1}{10}$$

Hence, A alone would do that work in 10 days.

100. (b) Suppose the distance covered be z km and speed of train be x km/h

\therefore According to the question,

$$\frac{z}{x} - \frac{z}{x+4} = \frac{30}{60} \Rightarrow \frac{zx+4-z}{x(x+4)} = \frac{1}{2}$$

$$\Rightarrow 8z = x^2 + 4x \quad \dots(i)$$

and $\frac{z}{x-2} - \frac{z}{x} = \frac{20}{60}$

$$\Rightarrow z \left[\frac{x-x+2}{x(x-2)} \right] = \frac{1}{3}$$

$$\Rightarrow 6z = x^2 - 2x \quad \dots(ii)$$

From Eqs. (i) and (ii), we get

$$\frac{x^2 + 4x}{8} = \frac{x^2 - 2x}{6}$$

$$\Rightarrow 6x^2 + 24x = 8x^2 - 16x$$

$$\Rightarrow 2x^2 - 40x = 0$$

$$\therefore 2x(x-20) = 0$$

$$\therefore x = 20 \text{ km/h}$$

Hence, distance covered

$$= \frac{(20)^2 - 2 \times 20}{6} = 60 \text{ km}$$

101. (a) Capacity of the tank = V

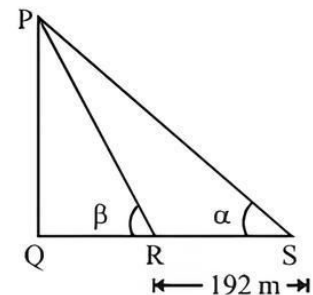
According to the question,

$$\frac{V}{5} + 22 = \frac{3}{4}V$$

$$\text{or, } \frac{3}{4}V - \frac{V}{5} = 22$$

$$\frac{11V}{20} = 22 \Rightarrow V = \frac{22 \times 20}{11} = 40 \text{ liters.}$$

102. (c) Height of tower be x m.



According to the question

$$\tan \alpha = \frac{x}{192 + QR}$$

$$\Rightarrow \frac{5}{12} = \frac{x}{192 + QR}$$

$$\Rightarrow \frac{12}{5} = \frac{192 + QR}{x} \quad \dots(i)$$

and $\tan \beta = \frac{x}{QR}$

$$\Rightarrow \frac{QR}{x} = \frac{4}{3} \quad \dots(ii)$$

On subtracting eq. (ii) from eq. (i), we get

$$\frac{192}{x} = \frac{12}{5} - \frac{4}{3} = \frac{36-20}{15} = \frac{16}{5}$$

$$\therefore x = \frac{192 \times 15}{16} = 180 \text{ m}$$

103. (a) Suppose amount of solution be 100 ml.
 \therefore Amount of water = 40 ml
 \therefore Amount of milk = 60 ml
 Let amount of solution replaced be x ml.
 New solution that is added has 81% milk and 19% water.

\therefore Amount of water in new solution obtained = 26% = 26 ml

$$\therefore 40 - \frac{40x}{100} + \frac{19x}{100} = 26$$

$$\Rightarrow 40 - 26 = \frac{21x}{100} \Rightarrow 14 = \frac{21x}{100}$$

$$\Rightarrow x = \frac{14}{21} \times 100 = \frac{2}{3} \times 100$$

$$\therefore \text{Quantity of milk replaced} = \frac{\frac{2}{3} \times 100}{100} = \frac{2}{3}$$

104. (d) Radius of the tent = 5 m
 Height of the tent = 12 m

$$\text{Slant height } (l) = \sqrt{(H)^2 + (R)^2} = \sqrt{(12)^2 + (5)^2} = 13 \text{ m}$$

\therefore Area of the canvas required

$$= \pi r l = \frac{22}{7} \times 5 \times 13 = 65\pi \text{ m}^2$$

105. (a) Let the total production of hematite be x kg.
 Amount of ore gets wasted = 20% of x
 Remaining amount = 80% of x

$$\text{Amount of pure iron obtained} = \frac{25}{100} \times \frac{80}{100} \times x$$

$$= \frac{1}{5} x \text{ kg}$$

According to the question,
 Amount of iron obtained in a year = 80000 kg

$$\therefore \frac{1}{5} x = 80000 \text{ or } x = 400000 \text{ kg}$$

106. (d) Speed of the car = a km/hr
 Relative speed = $(a - 2)$ km/h

$$\text{Now, } (a - 2) \times \frac{6}{60} = 0.6$$

$$\therefore (a - 2) = \frac{0.6 \times 60}{6} = 6 \Rightarrow a = 8 \text{ km/h.}$$

107. (b) Maximum 25 g of salt dissolves in 100 g water, after that sedimentation start.

$$\text{Amount of salt in given solution} = 1000 \times \frac{4}{100} = 40 \text{ g}$$

\therefore Minimum amount of water required after which

$$\text{sedimentation starts} = \frac{40}{25} \times 100 = 160 \text{ g}$$

\therefore Minimum 840 g needs to evaporated.

Time required to evaporated 840g of water

$$= \frac{840}{28} = 30 \text{ h}$$

\therefore In 31 hrs, solution starts sedimenting.

108. (a) Suppose the number of inlet pipes be x .

\therefore Number of outlet pipes = $6 - x$

According to the question,

$$\frac{a}{9} - \frac{(6-a)}{6} = \frac{1}{9}$$

$$\Rightarrow \frac{2x - 3 \times 6 + 3a}{18} = \frac{1}{9}$$

$$\Rightarrow 5a - 18 = 2$$

$$\therefore a = 4$$

Hence, the number of inlet pipes is 4.

109. (a) Number of positive integers = 20

Total number of ways in which 2 integers can be selected $n(S) = {}^{20}C_2 = 190$

For sum to be odd one integer must be odd and other even.

\therefore Number of ways in which 1 odd and 1 even integer can be selected $n(E) = 10 \times 10 = 100$

$$\therefore \text{P sum of odd} = \frac{n(E)}{n(S)} = \frac{100}{190} = \frac{10}{19}$$

110. (a) **Given data:** Radius of inner track = 100 m

Radius of outer track = 102 m

Time taken by A = 1 min 30 s = 90 s

Time taken by B = 1 min 32 s = 92 s

\therefore Distance covered by A = $2 \times \pi \times 100 = 200\pi$ m

Distance covered by B = $2 \times \pi \times 102 = 204\pi$ m

$$\therefore S_A = \frac{200\pi}{90}, S_B = \frac{204\pi}{92}$$

$$S_A : S_B = \frac{200\pi}{90} : \frac{204\pi}{92} = 18400 : 18360$$

So, $S_A > S_B$ i.e., speed of A is greater than B .

111. (d) Let x = no. of senior level employees

$$\therefore \frac{125 \times 5500 + x \times 14000}{125 + x} = 8687.5 \Rightarrow x = 75$$

$$\frac{4}{5} \text{ of total employees} = (125 + 75) = 200$$

Hence no. of total employees = $\frac{5}{4} \times 200 = 250$

112. (b) When SP of the object be ₹ 100 (says)
 \therefore CP of the object

$$= 100 - \frac{26}{100} \times 100 = ₹ 74$$

According to the question,
 34% of CP of the object

$$= \frac{34 \times 74}{100} = ₹ 25.16$$

= 25.16% of SP

113. (b) Here, length of cistern = 4.5 m

Breadth of cistern = 3 m

Volume/capacity of cistern = 50 m^3

$$\therefore \text{Height of cistern} = \frac{50}{4.5 \times 3} = \frac{100}{27} \text{ m}$$

Area to be lined with sheet lead

$$= 4.5 \times 3 + 2 \times \frac{100}{27} (4.5 + 3)$$

$$= 13.5 + 2 \times \frac{100}{27} \times 7.5$$

$$= 13.5 + \frac{1500}{27} = \frac{1864.5}{27} \text{ m}^2$$

\therefore Weight of lead required

$$= \frac{1864.5}{27} \times 27 = 1864.5 \text{ kg}$$

$$= 1864.62 \text{ kg}$$

114. (c) It is nothing but [1 - probability of bridge not getting destroyed] = $1 - 0.084 = 0.916$

115. (c) A covers 2 rounds in 1 h, while B covers 3 rounds in 1 h of a circular track.

Since, they are moving the opposite direction, therefore minimum time is the time when they first meet

$$= \frac{60}{5} = 12 \text{ min.}$$

\therefore They will meet 5 times in 1 h and 2 times in next 2 h.

Therefore, they will meet 7 times between 8 am to 9:30 am.

116. (c) Suppose that X men must be discharged at the end of the 18th day.

$$100 \times 10 + 150 \times 1 + 200 \times 7 + (200 - X) \times 5 = 100 \times 30$$

$$5X = 550 \Rightarrow X = 110 \text{ men}$$

117. (a) The ratio of speeds of A to B would be 2 : 3.

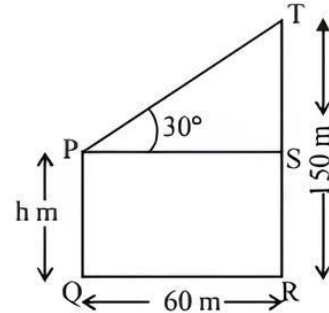


0.4 D means ratio of speeds = 2:3

The 4th meeting would occur after a combined movement of $D + 6D = 7D$. $2/5$ th of this distance would be covered by A and $3/5$ th of this distance would be the distance covered by B. Thus, distance covered by A would be $2/5$ th of $7D$ \therefore distance covered by A = $2.8D$ - which means that the 4th meeting occurs at a distance of $0.8D$ from P.

118. (c) Let the height of shorter tower be h m.

Let PQ be shorter tower and RT be the taller one.



In ΔPST , $\tan 30^\circ = \frac{ST}{PS}$

$$\frac{1}{\sqrt{3}} = \frac{150 - h}{60}$$

$$\Rightarrow 150 - h = \frac{60}{\sqrt{3}}$$

$$\Rightarrow h = 150 - 20\sqrt{3} = 116 \text{ m}$$

119. (c) Let the number of passed candidates be x .

Then total marks = 120×35

$$= 39x + (120 - x) \times 15$$

$$\Rightarrow 4200 = 39x + 1800 - 15x$$

$$\Rightarrow x = 100$$

120. (c) When 5L water taken out from cistern remaining water = $50 - 5 = 45 \text{ L}$

\therefore Water is replaced with wine.

\therefore After first replacement quantity of wine = 5L

Now, in next step same process is done and 10% of water and 10% of wine take out from mixture.

\therefore In mixture, remaining water

$$= 45 - 4.5 = 40.5 \text{ L}$$

$$\text{and remaining wine} = 5 - 0.5 = 4.5 \text{ L}$$

Again, 5 L of wine is added.

So, total quantity of wine in final mixture

$$= 4.5 + 5 = 9.5$$

and remaining water in final mixture = 40 L.

\therefore Required ratio = $9.5 : 40.5$

$$= 95 : 405 = 19 : 81$$

121. (a) Quality percentage in 2006

$$= \frac{130}{1008} \times 100 = 12.89\% \text{ (Lowest)}$$

Quality percentage in 2009

$$= \frac{220}{1198} \times 100 = 18.36\%$$

Quality percentage in 2010

$$= \frac{240}{1208} \times 100 = 19.86\% \text{ (Highest)}$$

Quality percentage in 2011

$$= \frac{238}{203} \times 100 = 19.78\%$$

So, quality percentage is maximum in 2010.

122. (a) Total number of qualifying candidate in year 2009
= 650 + 560 + 510 + 500 + 220 + 490
= 2930

Total number of qualifying candidate in year 2011
= 648 + 612 + 588 + 580 + 238 + 534
= 3200

$$\text{Difference} = 3200 - 2930 = 270$$

$$\text{Percentage Difference} = \frac{270}{2930} \times 100 = 9.21\%$$

123. (b) Total students qualified in 2009 from zone IV = 500

$$\text{Boys} = \frac{7}{10} \times 500 = 350$$

$$\text{Girls} = 150$$

Total students appeared in 2009 from zone IV = 2468

$$\text{Boys} = \frac{3}{5} \times 2468$$

$$\text{Girls} = \frac{2}{5} \times 2468$$

Boys qualified : Girls appeared

$$= 350 : \frac{2}{5} \times 2468$$

$$= 13 : 19 \text{ (approx)}$$

124. (d) II zone 2007 decrement in qualify
III zone qualifying student increase but appearing student decrease.
IV zone qualifying student increase but appearing student decrease.

125. (a) Total student appeared from zone V in 2008 and 2011 =
1143 + 1203 = 2346

Total student appeared from zone II in 2007 and 2010 =
2899 + 3698 = 6597

$$\text{Less student} = 6597 - 2346$$

$$= \frac{4251}{6597} \times 100 = 64.4\%$$

126. (a) From statement I
From question,
Increase in rate of interest

$$= 5\frac{1}{8} - 4\frac{7}{8} = \frac{41}{8} - \frac{39}{8} = \frac{2}{8} = \frac{1}{4}\%$$

Increased income = ₹ 25

Now, let money invested by ₹ x .

$$\text{Then, } 25 = x \times \frac{1}{4} \times \frac{1}{100} \Rightarrow x = ₹ 10000$$

From statement II,

$$\text{Here, SI} = ₹ 1000, r = 12\frac{1}{2} = \frac{25}{2}$$

$$P = ₹ 1000, r = 8\%$$

This is valid for all different amount.

127. (a) Suppose the height of triangle = H m
and base of triangle = B m

From Statement I,

$$\text{Area of triangle} = 20 \times B \text{ m}$$

Now, we know that

$$\text{Area of triangle} = \frac{1}{2} \times H \times B$$

$$\Rightarrow 20 \times B = \frac{1}{2} \times H \times B.$$

$$\Rightarrow H = 40 \text{ m.}$$

So, height of triangle is 40 m.

Hence, only statement I alone are sufficient to answer the question.

128. (a) Let height of the cylinder = h cm
Given, radius of spherical ball = r cm

From statement I,

Volume of cylinder = Volume of spherical ball

$$\Rightarrow \pi r^2 h = \frac{4}{3} \pi r^3$$

$$\therefore h = \frac{4}{3} r$$

Hence, only statement I alone are sufficient to answer the question.

129. (d) Given, length of train = 210 m

From statement I,

$$\text{Speed of train} = S_1 \text{ m/s}$$

$$\text{Speed of another train} = S_2 = \frac{300}{10} = 30 \text{ m/s}$$

$$\text{Now } S_1 + S_2 = \frac{L_1 + L_2}{T} \quad [\text{Opposite direction}]$$

$$\Rightarrow S_1 + 30 = \frac{210 + 300}{10} = \frac{510}{10}$$

$$\Rightarrow S_1 + 30 = 51.$$

$$\Rightarrow S_1 = 51 - 30 = 21 \text{ m/s}$$

$$\therefore S_1 = 21 \text{ m/s}$$

From statement II,

$$\text{Now, } L_2 = S_2 \times T$$

$$\Rightarrow L_2 = \frac{60 \times 1000}{60 \times 60} \times 30 = 500 \text{ m}$$

$$\therefore S_1 - S_2 = \frac{L_1 + L_2}{T}$$

$$\Rightarrow S_1 - \frac{60 \times 1000}{60 \times 60} = \frac{210 + 500}{30}$$

$$\Rightarrow S_1 - \frac{50}{3} = \frac{710}{30}$$

$$\Rightarrow S_1 = \frac{71}{3} + \frac{50}{3} = \frac{121}{3} \text{ m/s}$$

$$\therefore S_1 = \frac{121}{3} \text{ m/s}$$

Hence, both the statements are not sufficient to answer the question.

130. (d) From statement I,

$$\text{Speed of stream} = \frac{1}{3} \times \text{Man's speed}$$

$$\Rightarrow \text{Man's speed} = 3 \times \text{Speed of stream}$$

From statement II,

$$\text{Man's speed} = 2 \times \text{Speed of stream}$$

Hence, both the statements are not sufficient to answer the question.

$$131. (a) \text{ Year 2006} = \frac{5}{55} \times 100 = \frac{100}{11} \text{ (increase)}$$

$$\text{Year 2007} = \frac{10}{60} \times 100 = \frac{100}{6} \text{ (decrease)}$$

$$\text{Year 2008} = \frac{5}{50} \times 100 = \frac{100}{10} \text{ (increase)}$$

$$\text{Year 2009} = \frac{5}{55} \times 100 = \frac{100}{11} \text{ (decrease)}$$

$$\text{Year 2010} = \frac{5}{50} \times 100 = \frac{100}{10} \text{ (increase)}$$

So, year 2007 has maximum fall by $\frac{100}{6}\%$

132. (b) X's average production

$$= \frac{50 + 40 + 55 + 45 + 60 + 50}{6} = \frac{300}{6} = 50$$

Y's average production

$$= \frac{55 + 60 + 50 + 55 + 5 + 55}{6}$$

$$= \frac{325}{6} = 54.16$$

Z's average production

$$= \frac{45 + 50 + 60 + 60 + 45 + 40}{6}$$

$$= \frac{300}{6} = 50$$

So, Y's annual average production is maximum.

133. (a) X's average production in year 2005, 2006 and 2007

$$= \frac{50 + 40 + 55}{3} = \frac{145}{3}$$

Y's average production in year 2008, 2009 and 2010

$$= \frac{50 + 55 + 55}{3} = \frac{160}{3}$$

\(\therefore\) Required difference

$$= \frac{160}{3} - \frac{145}{3} = \frac{15}{3} = ₹5 \text{ lakh}$$

134. (b) Production in year 2005 = 50 + 55 + 45 = 150

Production in year 2007 = 55 + 50 + 60 = 165

Production in year 2009 = 60 + 50 + 45 = 155

Production in year 2010 = 55 + 50 + 40 = 135

So, the highest production in 2007.

135. (d) Total production of ice-cream in year 2009

$$= 60 + 55 + 45 = 155$$

Total production of ice-cream flavours Y and Z in year 2005 and 2007 combined

$$= 100 + 110 = 210$$

$$\therefore \text{Percentage} = \frac{155}{210} \times 100 = 73.80\%$$

136. (a) Quantity A = Probability of 53 Tuesday in leap year

$$= \frac{2}{7} = 0.2857$$

Quantity B = Probability of 52 Tuesday in non-leap

$$\text{year} = \frac{1}{7} = 0.1428$$

From above, it is clear that

Quantity A > Quantity B.

137. (b) Quantity A = SP of book sold by Stephen

$$\Rightarrow \text{SP} = \text{CP} \times \left(\frac{100 \pm \text{Profit/Loss}}{100} \right)$$

$$\Rightarrow \text{SP} = 56.25 \times \left(\frac{100 + 20}{100} \right) = 56.25 \times \frac{120}{100}$$

$$\Rightarrow \text{SP} = 56.25 \times \frac{6}{5} = \frac{337.50}{5}$$

$$\therefore \text{SP} = ₹67.50$$

Quantity B = SP of book sold by Roger

$$\Rightarrow SP = CP \times \left(\frac{100 \pm \text{Profit/Loss}}{100} \right)$$

$$\Rightarrow SP = 80.40 \times \left(\frac{100 - 5}{100} \right)$$

$$\Rightarrow SP = 80.40 \times \frac{95}{100}$$

$$= 80.40 \times \frac{19}{20} = \frac{1527.6}{20}$$

$$\therefore SP = ₹ 76.38$$

From above, it is clear that

Quantity B > Quantity A

138. (c) Let in each class there are 100 peoples.

\therefore After shifting, number of people in each class

$$X = 100 + 5 - 5 = 100$$

$$Y = 100 + 5 - 5 + 5 - 5 = 100$$

$$Z = 100 - 5 + 5 = 100$$

Finally, we get 100 people in each class.

\therefore Quantity A = The maximum possible average of class Y.

The maximum possible average of class Y is same as the earlier because number of people is same as earlier after shifting.

Quantity B = The maximum possible average of class X.

The maximum possible average of class X is same as the earlier because number of people is same as earlier after shifting.

\therefore Quantity A = Quantity B.

139. (d) Suppose the present age of Thomas Tim and Tom are = x , y and z years

ATQ,

$$3(x + 19) = (y + 10)$$

$$\Rightarrow 3x + 57 = y + 19$$

$$\Rightarrow 3x - y = -38 \quad \dots(i)$$

$$\text{and } x - 3 = z$$

$$\Rightarrow y - z = 3 \quad \dots(ii)$$

But we cannot solve these two equations because it is in two variables and we need three variables.

So, quantities cannot be compared.

140. (a) Quantity A = Mohit's commission in last week = ₹ 10

Quantity B = Manish total income in last week

$$= 5 + 25 \times 0.02 + 25 \times 0.03 + 50 \times 0.04$$

$$= 5 + 0.50 + 0.75 + 2 = ₹ 8.25$$

From above, it is clear that

Quantity A > Quantity B.

141. (d) P rate in 2012 = 6

Q rate in 2012 = 4

$$\frac{\text{P's amount received}}{\text{Q's amount received}}$$

$$= \frac{8x \times 6}{9x \times 4} = \frac{4}{3}$$

So, P : Q = 4 : 3

142. (a) Difference in interest

$$= \left(\frac{7 \times 500000}{100} - \frac{6.5}{100} \times 100000 \right)$$

$$= ₹ (35000 - 6500)$$

$$= ₹ 28500$$

143. (a) Company P's rate in 2008 = 8%

Sum = ₹ 1500000

$$1 \text{ year return} = \frac{1500000 \times 8 \times 1}{100} = 120000$$

Sum after one year = 1500000 + 120000

$$= ₹ 1620000$$

Next year rate = 10%

Sum = ₹ 1620000

$$\text{Final return} = \frac{1620000 \times 10 \times 1}{100} = ₹ 162000$$

Total amount = 1620000 + 162000 = ₹ 1782000

So, the total appreciation received by investor

$$= 1782000 - 1500000 = ₹ 282000$$

144. (b) P's rate in 2010 = 7.5

Rate of Q in 2010 = 9

Rate of R in 2010 = 9

$$\text{Total interest} = \frac{7.5 \times 30 \times 2}{100 \times 7} + \frac{9 \times 30 \times 1}{7 \times 100} + \frac{9 \times 30 \times 4}{7 \times 100}$$

$$= \frac{30}{7} \left(\frac{15 + 9 + 36}{100} \right)$$

$$= \frac{30}{7} \times \frac{60}{100} = ₹ 2.57 \text{ lakh}$$

145. (c) Average of Company P

$$= \frac{7 + 9 + 8 + 10 + 7.5 + 6.5 + 6}{7} = 7.7$$

Average of Company R

$$= \frac{8.5 + 8 + 8.5 + 7.5 + 9 + 8 + 7}{7} = 8.07$$

Average of Company Q

$$= \frac{6.5 + 8 + 9.5 + 8 + 9 + 8 + 4}{7} = 7.5$$

So, average of company R has highest

146. (a) Total number of students in institute S

= Graduation level + Post-graduation level

$$= 25400 \times \frac{13}{100} + 18600 \times \frac{12}{100}$$

$$= 3302 + 2232 = 5534$$

147. (d) Required ratio

$$= \frac{\text{Number of students in post-graduate level of institute K}}{\text{Number of students in under-graduate level of institute R}}$$

$$= \frac{18600 \times \frac{13}{100}}{25400 \times \frac{11}{100}} = \frac{186 \times 13}{254 \times 11}$$

$$= \frac{93 \times 13}{127 \times 11} = \frac{93 \times 13}{1397} = \frac{13}{15021} = \frac{13}{15} = 13 : 15$$

148. (b) Required ratio

$$= \frac{\text{Number of students in post-graduate level of Institute V}}{\text{Number of students in under-graduate level of Institute T}}$$

$$= \frac{18600 \times \frac{20}{100}}{25400 \times \frac{18}{100}} = \frac{186 \times 20}{254 \times 18}$$

$$= \frac{93 \times 10}{127 \times 9} = \frac{31 \times 10}{127 \times 3} = \frac{310}{381} = \frac{77.5 \times 4}{77.5 \times 4.92}$$

$$= \frac{4}{4.92} = \frac{4}{5} = 4 : 5$$

149. (b) Total number of students of Institute P and W are studying in graduate level

$$= 25400 \times \frac{19}{100} + 25400 \times \frac{15}{100}$$

$$= 254 \times 19 + 254 \times 15$$

$$= 254(19 + 15)$$

$$= 254 \times 34 = 8636$$

150. (c) Total number of students of Institute T and V are studying in post-graduate level.

$$= 18600 \times \frac{15}{100} + 18600 \times \frac{20}{100}$$

$$= 186(15 + 20)$$

$$= 186 \times 35 = 6510$$

151. (a) Approximate average number of females

$$= \frac{\text{IT + Gaming + Call centre} + \text{Sales + Banking + Medical}}{6}$$

$$= \frac{\frac{12}{100} \times 40250 \times \frac{20}{100} + \frac{18}{100} \times 40250 \times \frac{20}{100} + \frac{32}{100} \times 40250 \times \frac{45}{100} + \frac{8}{100} \times 40250 \times \frac{60}{100} + \frac{14}{100} \times 40250 \times \frac{40}{100} + \frac{16}{100} \times 40250 \times \frac{15}{100}}{6}$$

$$= \frac{\frac{40250}{100 \times 100} (12 \times 20 + 18 \times 20 + 32 \times 45 + 60 \times 8 + 14 \times 40 + 16 \times 15)}{6}$$

$$= \frac{40250}{100 \times 100} \times 3320$$

$$= 2227 \text{ (approx)}$$

152. (b) Females working in gaming

$$= \frac{18}{100} \times 40250 \times \frac{20}{100} = 1449$$

$$\text{Percentage} = \frac{\text{Females working in gaming}}{\text{Total person in night shift}} \times 100$$

$$= \frac{1449}{40250} \times 100 = 3.6$$

153. (c) Average number of females

$$= \frac{\text{IT + Gaming + Call centre + Sales + Banking + Medical}}{6}$$

$$= \frac{\frac{12}{100} \times 40250 \times \frac{20}{100} + \frac{18}{100} \times 40250 \times \frac{20}{100} + \frac{32}{100} \times 40250 \times \frac{45}{100} + \frac{8}{100} \times 40250 \times \frac{60}{100} + \frac{14}{100} \times 40250 \times \frac{40}{100} + \frac{16}{100} \times 40250 \times \frac{15}{100}}{6}$$

$$= \frac{\frac{40250}{100 \times 100} (12 \times 20 + 18 \times 20 + 32 \times 45 + 60 \times 8 + 14 \times 40 + 16 \times 15)}{6}$$

$$= \frac{40250}{100 \times 100} \times 3320 = 2227 \text{ (approx.)}$$

Total number of females working in night shift = 13363

Total no. of Males = 26887

Difference = 13524

$$\therefore \text{Percentage} = \frac{13524}{40250} \times 100 = 33.6\%$$

154. (a) Average number of females

$$= \frac{\text{IT + Gaming + Call centre + Sales + Banking + Medical}}{6}$$

$$= \frac{\frac{12}{100} \times 40250 \times \frac{20}{100} + \frac{18}{100} \times 40250 \times \frac{20}{100} + \frac{32}{100} \times 40250 \times \frac{45}{100} + \frac{8}{100} \times 40250 \times \frac{60}{100} + \frac{14}{100} \times 40250 \times \frac{40}{100} + \frac{16}{100} \times 40250 \times \frac{15}{100}}{6}$$

$$= \frac{\frac{40250}{100 \times 100} (12 \times 20 + 18 \times 20 + 32 \times 45 + 60 \times 8 + 14 \times 40 + 16 \times 15)}{6}$$

$$= \frac{40250}{100 \times 100} \times 3320 = 2227 \text{ (approx.)}$$

Total number of females = 13363

Total no. of females working in night shift in banking

$$= \frac{14}{100} \times 40250 \times \frac{40}{100} = 2254$$

By question = 3206

Difference = 3206 - 2254 = 952

After increment no. of females

$$= 13363 + 952 = 14315$$

Required percentage

$$= \frac{14315}{40250} \times 100 = 35.56\%$$

155. (a) No. of males in sales

$$= \frac{8}{100} \times 40250 \times \frac{40}{100} = 1288$$

No. of males in Banking

$$= \frac{14}{100} \times 40250 \times \frac{60}{100} = 3381$$

No. of males in Gaming

$$= \frac{18}{100} \times 40250 \times \frac{80}{100} = 5796$$

No. of males in IT and Medical

$$= \frac{12}{100} \times 40250 \times \frac{80}{100} + \frac{16}{100} \times 40250 \times \frac{85}{100}$$

$$= 3864 + 5474$$

$$= 9338$$

So, the lowest percentage of males in sales industry.

156. (d) Increase in production of Company Q from year 2009

$$\text{to year 2013} = \frac{100 - 50}{50} \times 100$$

$$= \frac{50}{50} \times 100\% = 100$$

157. (d) The average production of Company P

$$= \frac{60 + 90 + 50 + 100 + 80}{5} = \frac{380}{5}$$

= 76 lakh tonnes

The average production of Company Q

$$= \frac{50 + 70 + 70 + 80 + 100}{5} = \frac{370}{5}$$

= 74 lakh tonnes

The average production of company R

$$= \frac{70 + 80 + 90 + 70 + 70}{5} = \frac{380}{5}$$

= 76 lakh tonnes

Companies P and R has the maximum production over the years 2009-2013.

158. (b) Company Q % change in 2010

$$= \frac{70 - 50}{50} \times 100\%$$

$$= \frac{20}{50} \times 100\% = 40\%$$

$$\% \text{ change in 2011} = \frac{70 - 70}{70} \times 100 = 0$$

$$\% \text{ change in 2012} = \frac{80 - 70}{70} \times 100\%$$

$$= \frac{10}{70} \times 100 = \frac{100}{7}\% = 14.28\%$$

$$\% \text{ change in 2013} = \frac{100 - 80}{80} \times 100$$

$$= \frac{20}{80} \times 100 = 25\%$$

Company Q is in the year 2010 is maximum.

159. (a) Production of Company R to production of Company Q in year 2010

$$= \frac{(70 + 80) - (50 + 70)}{(70 + 50)} \times 100$$

$$= \frac{30}{120} \times 100 = 25\%$$

$$\text{In year 2011} = \frac{(70 + 90) - (70 + 80)}{(70 + 80)} \times 100$$

$$= \frac{10}{150} \times 100 = \frac{20}{3}\% = 6.67\%$$

$$\text{In year 2012} = \frac{(80 + 70) - (70 + 90)}{(70 + 90)} \times 100$$

$$= \frac{-10}{160} \times 100 = \frac{-25}{4}\% = -6.25\%$$

$$\text{In year 2013} = \frac{(70 + 100) - (80 + 70)}{(80 + 70)} \times 100$$

$$= \frac{20}{150} \times 100$$

$$= \frac{40}{3}\% = 13.33\%$$

Production of Company R to production of Company Q is the maximum in the year 2010.

160. (a) Average production of Company P in the years 2011 to 2013

$$= \frac{50+100+80}{3} = \frac{250}{3}$$

= 83.33 lakh tonnes

Average production of Company Q in the years 2011 to 2013

$$= \frac{70+80+100}{3} = \frac{250}{3}$$

= 83.33 lakh tonnes

$$\therefore \text{Required ratio} = \frac{\frac{230}{3}}{\frac{250}{3}} = \frac{230 \times 3}{250 \times 3} = \frac{23}{25} = 23 : 25$$

161. (d) In August 2020, Prime Minister launched a submarine optical fibre cable connecting Andaman & Nicobar Islands with Chennai. It is a **2300 Km long submarine cable** and will give residents of the islands a faster Internet connection. It will also **connect Port Blair to 7 other islands**. The estimated cost of the project is Rs 1,224 crore.
162. (c) In January 2020, the **Andhra Pradesh Assembly passed** The Andhra Pradesh Decentralisation and Equal Development of All Regions Bill, 2020, paving the way for three capitals for the state: Executive **capital** at Visakhapatnam; judicial **capital**-Kurnool; and legislative **capital** at Amaravati.
163. (d) In October 2019, Siachen glacier was made open for tourism. The whole area from Siachen base camp at Partapur to Kumar Post been opened for tourism purposes. It was closed during COVID and was later re-opened in September 2021.
164. (c) On 7th August 2020, Girish Chandra Murmu was appointed as the new Comptroller and Auditor General of India (CAG.) Earlier, he was the Lieutenant-Governor of Jammu & Kashmir Union Territory. Before him, Rajiv Mehrishi assumed the CAG office on 25 September 2017.
165. (a) The first "Kisan Rail" flagged by Union Minister of Agriculture Minister Narendra Singh Tomar and Railway Minister Piyush Goyal via videoconferencing. The train run by Indian railways started its journey on 8th August 2020 from **Devlali (Maharashtra) to Danapur (Bihar)**.
166. (c) 'Saksham', an annual one-month long fuel conservation mega campaign of Petroleum Conservation Research Association (PCRA) under the aegis of Ministry of Petroleum and Natural Gas, was launched in January 2020 by Dr. M.M Kutty, Secretary, Ministry of Petroleum & Natural Gas in a function held in Delhi.
167. (a) Among the following countries, India has helped in building the Supreme Court of Mauritius. **The Prime Minister of India** and the **Prime Minister of Mauritius** jointly inaugurated the new **Supreme Court building of Mauritius** on 30th July, 2020. It was the **first India assisted infrastructure project** within the capital city of **Port Louis, Mauritius**.
168. (d) **Sir David Attenborough** was conferred with the prestigious **Indira Gandhi Peace Prize** for the year 2019. He is an English broadcaster and a historian. He is popular for writing and presenting the **BBC Natural History Unit**. He worked to make aware to preserve and protect the biodiversity of the planet.
169. (c) International Food Safety Day is celebrated every year on June 7. The United Nations has declared this day to draw global attention to the health consequences of contaminated food and water. The WHO announced the theme for the World Food Safety Day 2022, "**Safer Food, Better Health**".
170. (b) **World Bank** releases "**The Human Capital Index**". The Human Capital Index (HCI) 2020 is a collaboration between the **Human Development Practice Group** and the Development Economics Group of the World Bank. India has been ranked at the **116th position** among 174 countries in the Human Capital Index 2020. Singapore topped the list.
171. (a) The Government of Telangana hosted the Bio-Asia Summit 2020 in **Hyderabad** between February 17, 2020 and February 19, 2020. The main objective of the summit is to explore the capabilities of Life Science Companies and their investments.
172. (b) First-ever India Africa Defense Ministers Conclave (IADMC) was **held in Lucknow, Uttar Pradesh on the sidelines of the DefExpo 2020**. One of the key outcomes of the conclave was the Lucknow declaration even as both sides agreed to institutionalize the meet to take place on the sidelines of every DefExpo.
173. (b) Project ReWeave was initiated by Microsoft India (R&D) Pvt. Limited in 2016 as part of its Philanthropies efforts, with the aim to revive the handloom weaving ecosystem in India. In 2020 a new e-commerce platform 're-weave.in' under project ReWeave to aid handloom weavers.
174. (a) Mustapha Abdul Wahed Adib was appointed as the prime minister-designate in August 2020 but stepped down when he failed to form a cabinet. Current PM of Lebanon is Najib Mikati who took charge in September 2021.
175. (c) *Swabh Bharat Revolution* is a book authored by *former Secretary, Ministry of Jal Shakti-Parameswaran Iyer* in 2019. He was appointed as *CEO of NITI Aayog* in July 2022.
176. (b) Vodafone PLC won a long-pending arbitration case against India's income tax (IT) department on a retrospective tax in The Permanent Court of Arbitration at Hague. The Court ruled that conduct

of Income Tax department is in breach of fair and equitable treatment under Bilateral Investment Treaty between India and Netherlands.

177. (d) Losoong is the Sikkimese New Year celebrated by the Bhutia tribe every year in December. Losoong marks the end of the harvest season and also the end of the Tibetan year. It falls in the end of the tenth Tibetan lunar month (in December).
178. (c) Noted Sindhi writer **Vasdev Mohi** was honoured with 29th Saraswati Samman. He has been selected for his short stories collection:- *Chequebook*, published in 2012. This short stories collection talks about the agonies and sufferings of marginalized sections of the society. The *Saraswati Samman* is an annual award for outstanding prose or poetry literary works in any of the 22 languages of India listed in Schedule VIII of the Indian Constitution. It is presented by KK Birla Foundation.
179. (a) In September 2020, PM Modi inaugurated 'Ganga Avalokan', the first museum on Ganga aimed at showcasing the culture, biodiversity and rejuvenation activities done in the river. The museum is located at Chandi Ghat, Haridwar. The museum has been established by the National Mission for Clean Ganga (NMCG) – a nodal body to implement the 'Namami Gange' programme – along with the Dehradun-based Wildlife Institute of India (WII).
180. (c) In September 2020, a team led by astronomers in the United Kingdom detected the chemical phosphine in the thick clouds of Venus. This generated buzz that 'Venus' could somehow harbor life within its acidic clouds as Earth's atmosphere contains small amounts of phosphine, which may be produced by life.
181. (d) Ministry of Human Resource Development, the Ministry of Housing & Urban Affairs, and **All India Council for Technical Education (AICTE)** have jointly launched an online portal called **The Urban Learning Internship Program (TULIP)**. It is started for providing internship opportunities to fresh graduates in all Urban Local Bodies (ULBs) and Smart Cities across the country.
182. (c) In Australian Open 2020, Novak Djokovic defeated Dominic Thiem to win the Men's Singles title while Sofia Kenin defeated Garbiñe Muguruza to win the Women's Singles title.
183. (b) Ministry of Road Transport and Highways had issued advisories dated 30th March, 2020, 9th June, 2020 and 24th August 2020 to all States and Union Territories regarding extension of validity of the documents related to Motor Vehicles Act, 1988 and Central Motor Vehicle Rules, 1989. It was advised that the validity of Fitness, Permit (all types), Driving License, Registration or any other concerned document (s) whose extension of validity could not or not likely be granted due to lock-down and which had expired since 1st of Feb, 2020, or would expire by 31st of December 2020 the same might be treated as valid till 31st of December 2020.
184. (a) **Prime Minister Benjamin Netanyahu** has won the **Israeli national election**, securing a record **fifth term in office**, after a controversial power-sharing deal with **rival-turned-partner Benny Gantz**. President **Reuven Rivlin** officially granted Netanyahu, two-week mandate to form his government, following which, Netanyahu announced the formation of his coalition government on **17 May 2020**.
185. (b) **India ranked 142nd** out of 180 countries **World Press Freedom Index, 2020**. **Norway ranked first** in the Index for the fourth year running. The report has been **published every year since 2002 by Reporters Sans Frontieres (RSF) or Reporters Without Borders**.
186. (d) Ebrahim Alkazi was an Indian theatre director and drama teacher. He is considered Father of Modern Indian Theatre and was the first and the longest serving director of the National School of Drama.
187. (c) In May 2020, TS Tirumurti was appointed as the Permanent Representative of India to the United Nations. He was in office till 30 June 2022. He is now retired.
188. (d) Five Noida girls developed an app "Maitri" which won the bronze medal at the **Technovation Challenge**, world's largest technology and entrepreneurship programme for girls, held in San Francisco, US. **Maitri** allows old-age homes and orphanages to sign up and organize meetings, thus facilitating children and senior citizens to spend time together.
189. (b) The third **Khelo India Youth Games** was held from 10 January 2020 and 22 January 2020 in Guwahati, Assam, India. Khelo India programme's inaugural edition was held in New Delhi in 2018, while Pune hosted 2nd edition in 2019. The 4th Edition was postponed thrice and was held in June 2022 at Panchkula, Haryana. Since question is of 2020, the 2020 edition takes priority.
190. (a) The Expert Committee constituted by the Ministry of Electronics and Information Technology (Chair: Mr. Kris Gopalakrishnan) to study various issues relating to non-personal data submitted its report in July, 2020. It suggested a data sharing framework to tap the economic, social, and public value of such data.
191. (c) Chennai was named the best Mega City in Innovation and Practices in Swachh Survekshan 2020. Meanwhile, Greater Hyderabad has been awarded the Best Mega City award in the category of 'Citizen Feedback'. Bengaluru has been named as the Best Self-Sustainable Mega City.
192. (a) Ex DHARMA GUARDIAN is an annual exercise between Indian Army and Japanese Ground Self

Defence Force. The 2022 edition of the exercise commenced on 27 February 2022 at Foreign Training Node, Belgaum and culminated on 10 March 2022 after twelve days of intense joint military training, providing an unique opportunity of achieving synergy.

193. (d) Five athletes received Rajiv Gandhi Khel Ratna in 2020- Cricketer Rohit Sharma, table tennis player Manika Batra, wrestler Vinesh Phogat, Women's hockey captain Rani Rampal and para- athlete Mariyappan Thangavelu. Other cricketers who have won the award- Sachin Tendulkar (1997-98), MS Dhoni (2007) and Virat Kohli (2018). The award has been renamed to Major Dhyan Chand Khel Ratna Award.
194. (c) In October 2020, Punjab National Bank (PNB) launched "Gram Sampark Abhiyan", a nation-wide Financial Inclusion and Literacy Campaign on the occasion of the 151st birth anniversary of Mahatma Gandhi.
195. (a) **The Thirteenth Meeting of the Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS COP13)** was held in Gandhinagar, from 15 to 22 February 2020. The theme of CMS COP-13 was '**Migratory species connect the planet and we welcome them home**'.
196. (b) Digital Seva Setu is an initiative by the Gujarat Government to extend digital services to every citizen of the state. Hon'ble CM of Gujarat, Shri Vijay Rupani launched the scheme on 8th October 2020 in the presence of PM Shri Narendra Modi. The scheme covered about 3500 villages by December 2020.
197. (d) NASA's Artemis mission is touted as the **next generation of lunar exploration**. With the Artemis programme, **NASA aims to land humans on the moon by 2024**, and it also plans to land the **first woman and first person of colour on the moon**. NASA will establish an **Artemis Base Camp** on the surface and a **gateway (the lunar outpost around the Moon)** in lunar orbit to aid exploration by robots and astronauts.
198. (a) In June 2020, **World Bank** has approved the **Strengthening Teaching-Learning and Results for States (STARS) Programme**. **The programme aims to improve the quality and governance of school education in six Indian states of Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Odisha and Rajasthan** through the **Samagra Shiksha**.
199. (a) Indian Navy launched Operation 'Samudra Setu' repatriate Indian nationals stranded overseas by sea to India amid Covid Pandemic as a part of "Vande Bharat Mission".
200. (d) In July 2020, the Reserve Bank of India (RBI) has announced guidelines for "Fair Practices Code" (FPC) for Asset Reconstruction Companies (ARCs) to ensure highest standards of transparency and fairness. All ARCs registered with banks have been asked to put in place FPC duly approved by their Board.