PART-I
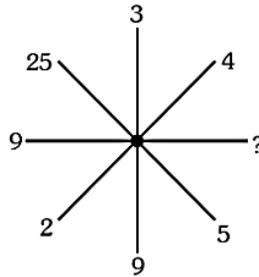## IQ (MENTAL ABILITY)

This section contains **20 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.
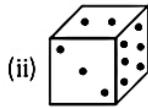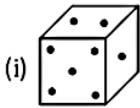
1. Pointing to a man in the photograph Sheela said "His father's only daughter is sister of my father". How is Sheela related to that man :
(1) Wife
(2) Daughter
(3) Niece
(4) Either Niece or Daughter

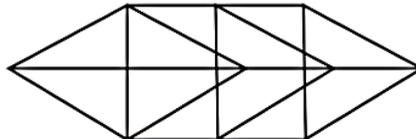**2.** Find the missing character.

(1) 81
(2) 64
(3) 32
(4) 20

3. Two positions of a block are given below. When 1 is at the top, which number will be at the bottom:
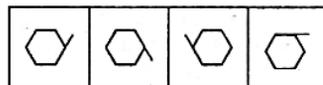

(1) 3
(2) 2
(3) 5
(4) 6

4. If '+' means '÷', '÷' means '–', '–' means '×', and '×' means '+' then 12 + 2 × 10 ÷ 8 – 2 will be:
(1) 0
(2) –15
(3) 10
(4) 16

5. Count the number of triangles in the figure given below ?

(1) 19
(2) 22
(3) 24
(4) None of these

6. In the following question, choose the correct mirror image from alternatives 1, 2, 3 and 4 of the figure (X).
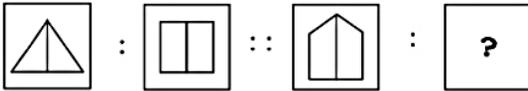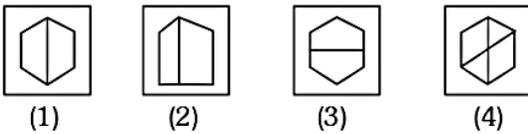

(X)   (1) (2) (3) (4)

7. A man walks 6 km South, turns left and walks 4 km, again turns left and walks 5 km. Which direction is he facing now?

(1) South   (2) North   (3) East   (4) West

8. In the following question there is some relationship between two figure on the left of (::) the same relationship exists between the two terms of right, of which one is missing. Find the missing one from the given alternative:
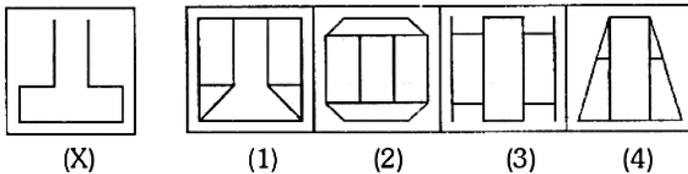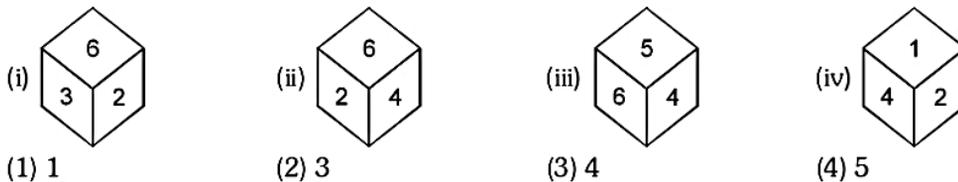
Question-Figures

Answer-Figures

9. Pointing to a lady Simon said, "She is the daughter of the only sister of my father." How is lady related to Simon ?

(1) Mother   (2) Aunt   (3) Sister   (4) Cousin

10. Which letter is in the middle of 7th letter from left and 10th letter from right in the English alphabet?

(1) L   (2) P   (3) M   (4) Q

11. In the given question choose the alternative figure in which the question figure (X) is embedded

12. Find the next number of the series.

824, 408, 200, 96, 44, 18

(1) 5   (2) 11   (3) 12   (4) 7

13. Four positions of a block are given below. Which number is on the face opposite 2 :

(1) 1   (2) 3   (3) 4   (4) 5

14. If in a coded language 'BRINJAL' is written as 'LAJNIRB', then how will 'LADYFINGER' be written in the code ?

(1) RNEGIFYDAL   (2) RINEGIFYDAL   (3) REGNIFYDAL   (4) REGNIFYDYAL

15. Relationship between : aeroplane, ship and passenger is best illustrated by :

(1)   (2)   (3)   (4)

16. The time in a clock is quarter past twelve. If the hour hand points to the East, which is the direction opposite to the minute hand?

(1) South-West   (2) South   (3) West   (4) North

17. In the given question, a number series is given. Find the number that should come in the place of question mark.

3, 7, 10, 17, 27, ?

(1) 54   (2) 48   (3) 44   (4) 42

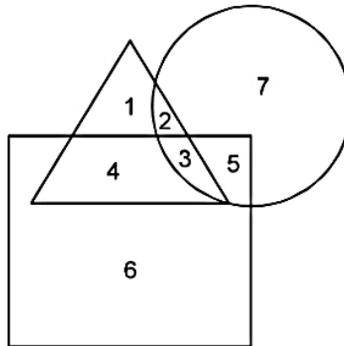**18.** If in a certain language, SHIFT is coded as RFFBO, which word would be coded as LKUMB ?

(1) MMXQG   (2) MLVNC   (3) KJVLA   (4) MJVLC

19. Find the water image of

VAYU8436

(1) ΛΑΥΛ8Τ39   (2) VΑΥU8436   (3) ΛΑΥΛ8Τ3Ө   (4) VΑΥΛ8Τ3Ө

20. In the figure given below, triangle represents the healthy, square represents the old and circle represents the men. Find out the area of the figure which represents the men who are healthy but not old ?

(1) 1   (2) 2   (3) 3   (4) 7

PART-II
SECTION-A : PHYSICS
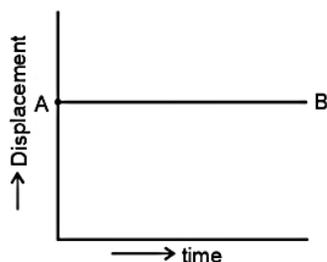
This section contains **15 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

21. Why is the fuse wire used?

(1) to stop the flow of electric current

(2) to protect the user from getting an electric shock

(3) to stop the flow of an excess current

(4) All of these

22. In the graph *AB* of displacement versus time :

    (1) The body is at rest

    (2) The body moves with increasing speed

    (3) The body moves with constant speed

    (4) The body moves with constant velocity

23. 132°F temperature is equivalent to :

    (1) 55.55°C   (2) 405 K   (3) 269.6°C   (4) 105.33°C

24. Insulators do not allow the electric current to flow through them. This is due to a fact that :
    (1) They do not have free electrons   (2) They do not have free protons
    (3) They do not have free neutrons   (4) They do not have electrons

25. Electroplating is the method of coating one metal with another using an electric current, then choose the correct statement :

    (1) In this method object to be coated is made the cathode (connected to negative terminal of the battery) and metal to be deposited is made the anode (connected to positive terminal of the battery)

    (2) In this method object to be coated is made the anode (connected to negative terminal of the battery) and metal to be deposited is made the cathode (connected to positive terminal of the battery)

    (3) In this method object to be coated is made the anode (connected to positive terminal of the battery) and metal to be deposited is made the cathode (connected to negative terminal of the battery)

    (4) In this method object to be coated is made the cathode (connected to positive terminal of the battery) and metal to be deposited is made the anode (connected to negative terminal of the battery)

26. Which of the following device allows a submarines, when submerged at shallow depth, to search visually for near by targets and threats on the surface of water and in the air?
    (1) Periscope   (2) Kaleidoscope   (3) Electroscope   (4) Sthetoscope

27. An object of mass 500gm is moving with an acceleration $2m/s^2$, then find out the force applied ?
    (1) 1000N   (2) 1N   (3) 100N   (4) 250N
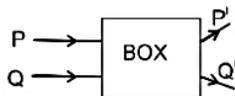
28. A person clapped his hands near a cliff and heard the echo after 5 s. What is the distance of the cliff from the person if the speed of sound is 346 ms^{-1}?
    (1) 965 m   (2) 865 m   (3)1730 m   (4) 346 m

29. A cyclist moves from a certain point x and goes round a circle of radius 'r' and reaches y, exactly at the other side of the point x. Then the displacement of the cyclist would be :

    (1) πr (2) $2\pi r$ (3) 2r   (4) $\dfrac{2\pi}{r}$

30. A compass needle when placed close to a current carrying wire deflects, this is due to :
(1) Heating effect   (2) Lightning effect   (3) Magnetic effect   (4) Chemical effect

31. Two parallel rays P & Q entering a box leave as rays P' & Q' as shown in the figure. The appropriate optical device used in the box would be a :

(1) Prism   (2) Mirror   (3) Convex lens   (4) Concave lens

32. A manufacturer marks the thermometer wrongly. At 0°C it reads –10°C, at 100°C it reads 85°C. Then the reading at actual temperature 50°C will be :
(1) 40°C   (2) 32.5°C   (3) 37.5°C   (4) 42.5°C

33. One atmospheric pressure is approximately equivalent to :
(1) 1.01×10^4 Nm^{-2} (2) 1.01×10^5 Nm^{-2} (3) 1.01×10^6 Nm^{-2} (4) none of the these

34. Calculate the wavelength of radio waves of frequency 10^9 Hz if the speed of radio waves is 3×10^8 m/s.
(1) 60 cm   (2) 40 cm   (3) 30 cm   (4) 10 cm

35. We have seen persons having brown, black, blue etc colour of eye. Then the part of human eye which gives it its distinctive colour is :
(1) Pupil   (2) Iris   (3) Sclera   (4) Cornea

SECTION-B : CHEMISTRY

This section contains *15 Multiple Choice Questions.* Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.
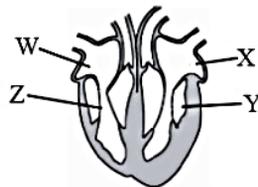
36. An example of mineral acid among the following is/are
(1) Citric acid   (2) Acetic acid   (3) Both (1) and (2)   (4) Nitric acid

37. The monomer for orlon will be
(1) Methyl nitrile   (2) Acrylonitrile   (3) Ethylene glycol   (4) Adipic acid

38. All are chemical changes except
(1) Rusting of iron   (2) Melting of ice   (3) Cooking of food   (4) Both (2) and (3)

39. Complete the following reaction
$K + H_2O \rightarrow ?$
(1) $KOH + H_2O$ (2) $K_2O + H_2O$ (3) $KOH + H_2$ (4) $K_2O + CO_2$

40. The process of seeping of water into the ground is called
(1) Infiltration   (2) Aquifer   (3) Water table   (4) None of the these

41. Which is a thermosetting plastic?
(1) Melamine   (2) Nylon   (3) PVC   (4) Polyethene

42.

Column - I	Column - II
(i) Turmeric	(p) Red in acidic medium
(ii) Phenolphthalein	(q) Red in basic medium
(iii) Litmus	(r) Pink is basic medium
(iv) Methyl orange	(s) Yellow in basic medium

(1) i-p, ii-s, iii-q, iv-r   (2) i-q, ii-r, iii-p, iv-s   (3) i-s, ii-p, iii-q, iv-r   (4) i-r, ii-p, iii-s, iv-q

43. World water day is celebrated on
(1) 22nd March   (2) 24th March   (3) 28th February   (4) 1 March

44. Raman's mother prepared a concentrated sugar syrup by dissolving sugar in hot water. On cooling, crystals of sugar got separated. This shows
(1) Physical change that can be reversed
(2) Chemical change that can be reversed
(3) Physical change that cannot be reversed
(4) Chemical change that cannot be reversed

45. Which of the following reaction(s) is possible ?
(1) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
(2) $Cu + FeSO_4 \rightarrow CuSO_4 + Fe$
(3) $Zn + MgSO_4 \rightarrow ZnSO_4 + Mg$
(4) $Ag + Cu(NO_3)_2 \rightarrow AgNO_3 + Cu$

46. Polycot is made by mixing
(1) Polyester and wool
(2) Polyethene and cotton
(3) Polyvinyl chloride and cotton
(4) Polyester and cotton

47. Which among the following will have pH > 7 ?
(1) $NaCl$ (2) Na_2CO_3 (3) NH_4Cl (4) Both (1) and (3)

48. Rayon is also known as
(1) Artificial silk
(2) Semi-synthetic fibre
(3) Regenerated fibre
(4) All of these

49. During chemical change
(1) Energy is neither absorbed nor released
(2) New substances may or may not be formed
(3) Energy is either released or absorbed
(4) Chemical changes are always reversible

50. Match column I with column II

Column-I	Column-II
(i) Lusturous non-metal	(p) Bromine
(ii) Liquid non-metal	(q) Gallium
(iii) Metal that can be cut with knife	(r) Sodium
(iv) Metal which melts at palm	(s) Iodine

(1) i-s, ii-p, iii-r, iv-q
(2) i-p, ii-s, iii-q, iv-r
(3) i-s, ii-r, iii-p, iv-q
(4) i-s, ii-p, iii-q, iv-r

SECTION-C : BIOLOGY

This section contains **15 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

51. Cell wall in prokaryote is made up of
(1) Cellulose   (2) Chitin   (3) Peptidoglycan   (4) All the above

52. Glycolysis is the conversion of
(1) Glucose to glycogen   (2) Glycogen to glucose
(3) Glucose to pyruvic acid   (4) Glucose to citric acid

53. Which of these is not a cereal?
(1) Maize   (2) Gram   (3) Wheat   (4) Rice

54. Which of these diseases is caused by a protozoan?
(1) Dengue   (2) Kala-azar   (3) Typhoid   (4) Both (2) and (3)

55. What is crown?
(1) The branchy part of tree above stem
(2) Layer formed by grasses over the land
(3) Lower storeys of a tall multistoreyed building
(4) None of these

56. Ascent of sap is the
(1) Upward movement of water containing dissolved minerals
(2) Upward and downward movement of food.
(3) Movement of hormones from root and shoot tip
(4) Process of loss of water from the leaves

57. Plasma membrane is
(1) Permeable   (2) Selectively Permeable
(3) Impermeable   (4) None of these

58. The diagram shows the human heart.
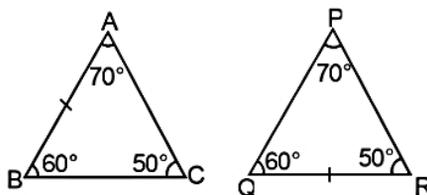

Which two chambers contract at the same time ?

(1) W and X   (2) W and Z   (3) X and Z   (4) X and Y

59. What is true about weeds?
(1) Weeds can be killed by weedicides.
(2) Some weeds can be eaten by us.
(3) The best time for the removal of weeds is before they produce flowers and seeds.
(4) All of the above

60. AIDS is caused by
(1) Virus   (2) Bacterium   (3) Fungus   (4) Helminth

61. A food chain consists of
(1) Producers
(2) Consumers
(3) Decomposers
(4) Producers, consumers and decomposers

62. Endoplasmic reticulum without association with ribosomes is called
(1) Rough endoplasmic reticulum
(2) Smooth endoplasmic reticulum
(3) Agranular endoplasmic reticulum
(4) Both (2) and (3)

63. Exchange of gases in lungs is by
(1) Simple diffusion
(2) Active transport
(3) Passive transport
(4) Osmosis

64. Which of the following statements is true?
(1) All veins carry deoxygenated blood
(2) All arteries carry oxygenated blood
(3) All veins except one carry oxygenated blood
(4) All arteries except one carry oxygenated blood

65. Biological control of agricultural pests, unlike chemical control, is
(1) very expensive
(2) less polluting
(3) toxic
(4) more polluting

SECTION-D : MATHEMATICS

This section contains **15 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

66. In the given figure, mention the congruent triangles :

(1) $\triangle ABC \cong \triangle PQR$ (2) $\triangle ABC \cong \triangle QPR$ (3) $\triangle ABC \cong \triangle RPQ$ (4) None of these

67. The value of $1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{9}}}$ is

(1) $\dfrac{29}{19}$ (2) $\dfrac{10}{19}$ (3) $\dfrac{29}{10}$ (4) $\dfrac{10}{9}$

68. Find the cost of painting the walls of a room of 5 metres long, 4 metres broad and 4 metres high at Rs 8.50 per sq metre.

(1) Rs 610   (2) Rs 216   (3) Rs 512   (4) Rs 612

69. The value of $64^{\frac{-1}{3}}(64^{\frac{1}{3}}-64^{\frac{2}{3}})^2$ is :

(1) 4   (2) 32   (3) 36   (4) -60

70. The smallest number which must be added to 37460 to make it perfect square is :

(1) 174   (2) 176   (3) 189   (4) 182

71. Three numbers are in the ratio 3 : 2 : 4. The sum of their cubes is 792. The second number is :

(1) 4   (2) 8   (3) 6   (4) None of these

72. How many edges does a cuboid have?

(1) 6   (2) 8   (3) 12   (4) 16

73. Simplify :

$$27-\left[38-\left\{46-(15-\overline{13-2})\right\}\right]$$

(1) 28   (2) – 37   (3) 17   (4) 31

74. The fraction $11\dfrac{27}{10}$ on decimal form is :

(1) 0.137   (2) 1.37   (3) 13.7   (4) 137

75. In a quadrilateral PQRS, the diagonals PR and QS are equal and perpendicular to each other. Then PQRS is a ....

(1) Parallelogram   (2) Rhombus

(3) Trapezium   (4) Square

76. The perimeter of a rhombus is 160 cm and one diagonal is 10 cm long, then the length of the other diagonal is

(1) $\sqrt{10}$ cm   (2) $\sqrt{37}$ cm   (3) $30\sqrt{7}$ cm   (4) $\sqrt{41}$ cm

77. Solve : $3(x-1)=2x-11$.

(1) – 8   (2) 8   (3) – 10   (4) 10

78. Solve the equation : $3x-2(2x-5)=2(x+3)-8$:

(1) 4   (2) – 4   (3) $\dfrac{7}{5}$ (4) $\dfrac{-7}{5}$

79. The product of two rational numbers is $\dfrac{-8}{9}$. If one of the number is $\dfrac{-4}{15}$, then the other is :

(1) $\dfrac{32}{135}$ (2) $\dfrac{10}{3}$ (3) $\dfrac{3}{10}$ (4) None of these

80. Two supplementary angles are such that one is $\dfrac{4}{5}$ of the other, then angles are :

(1) 50°, 40°   (2) 100°, 80°   (3) 35°, 28°   (4) 135°, 45°