SECTION : PHYSICS

This section contains **9 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

1. A body moving with uniform speed in a circular path has:
(1) Zero acceleration
(2) Constant velocity
(3) Changing velocity but constant speed
(4) Both constant velocity and constant acceleration

2. A person standing in a moving bus falls forward when the bus suddenly stops. This is explained by:
(1) Newton's first law of motion
(2) Newton's second law of motion
(3) Newton's third law of motion
(4) Law of gravitation

3. A bullet of mass 20 g is fired with a velocity of 200 m/s from a gun of mass 4 kg. The recoil velocity of the gun is:
(1) 0.5 m/s
(2) 1 m/s
(3) 2 m/s
(4) 4 m/s

4. A force of 10 N acts on a body and displaces it by 5 m. If the angle between the force and displacement is 60°, the work done is:
(1) 0 J
(2) 25 J
(3) 50 J
(4) 10 J

5. A person standing in front of a cliff hears an echo after 2 seconds. If the speed of sound is 340 m/s, the distance between the person and the cliff is:
(1) 170 m
(2) 340 m
(3) 680 m
(4) 85 m

6. An object is placed 20 cm in front of a plane mirror. The distance between the object and its image is:
(1) 10 cm
(2) 20 cm
(3) 40 cm
(4) 80 cm

7. A train moving at 20 m/s is brought to rest uniformly in 5 seconds. The distance travelled before stopping is:
(1) 25 m
(2) 40 m
(3) 50 m
(4) 100 m

8. A 2 kg object moving at 10 m/s is brought to rest in 0.5 seconds. The magnitude of the average retarding force is:
(1) 10 N
(2) 20 N
(3) 40 N
(4) 50 N

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9. A person jumps from a boat onto a stationary bank. The boat moves backwards. The best explanation is:
(1) The boat has no inertia.
(2) The person exerts a force on the boat, and the boat exerts an equal and opposite force on the person.
(3) The force exerted by the person is greater than the force exerted by the boat.
(4) The boat moves backwards because its mass is greater than the person's mass.

SECTION : CHEMISTRY

This section contains **9 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

10. The formula of the compound formed between an element of atomic number 20 and an element of atomic number 16 is:
(1) CaS
(2) Ca_2S
(3) CaS_2
(4) Ca_2S_3

11. An ion X^{2+} has 18 electrons and mass number 40. The number of protons and neutrons in it are respectively:
(1) 18 and 22
(2) 20 and 20
(3) 16 and 24
(4) 20 and 22

12. Which of the following will show the Tyndall effect?
(1) Sodium chloride solution
(2) Copper sulphate solution
(3) Starch solution
(4) Sugar solution

13. 20 g of sodium chloride is dissolved in 80 g of water. The mass percentage of the solution is:
(1) 25%
(2) 20%
(3) 16%
(4) 80%

14. Which of the following is a set of metalloids?
(1) Boron, silicon, arsenic
(2) Carbon, sulphur, phosphorus
(3) Sodium, silicon, iodine
(4) Aluminium, chlorine, germanium

15. The mass of one atom of sodium (atomic mass 23 u) in grams is approximately:
(1) 3.82×10^{-23} g
(2) 2.3×10^{-22} g
(3) 6.022×10^{-23} g

16. Which of the following pairs are isotones?
(1) $_{18}Ar^{40}$ and $_{20}Ca^{40}$
(2) $_{19}K^{39}$ and $_{20}Ca^{40}$
(3) $_{6}C^{12}$ and $_{6}C^{14}$
(4) $_{17}Cl^{35}$ and $_{17}Cl^{37}$

17. The molar mass of aluminium sulphate, $Al_2(SO_4)_3$, is: (Al = 27, S = 32, O = 16)
(1) 150 g/mol

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(2) 278 g/mol
(3) 342 g/mol
(4) 450 g/mol

18. Which statement about Bohr's model is correct?
(1) Electrons continuously radiate energy while revolving in any orbit
(2) Electrons do not radiate energy while revolving in a stationary orbit
(3) The maximum number of electrons in the M shell is 8
(4) Electrons can stay between two orbits

SECTION : MATHEMATICS

This section contains **9 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

19. $x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 = 0$

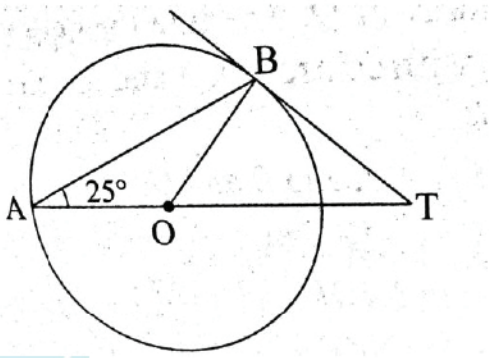
(1) 1,-8
(2) -1,-8
(3) 1,8
(4) -1,8

20. $\left(\sqrt{5}+\sqrt{3}\right)\left(\frac{\sqrt[3]{3}}{\sqrt{5}+\sqrt{2}} - \frac{\sqrt{5}}{\sqrt{3}+\sqrt{2}}\right)$

(1) $\sqrt[3]{3}$
(2) $\sqrt[4]{3}$
(3) $\sqrt[2]{3}$
(4) $\sqrt[2]{2}$

21. The difference of compound interest and simple interest of a certain amount of money for 1 year (the compound interest is calculated half-yearly) is ₹ 180. If the rate of interest in both cases is 10%, find the amount of money.
(1) ₹72000
(2) ₹7000
(3) ₹5000
(4) ₹6500

22. . AB is a chord of the circle with centre O.The tangent at B intersects produced AO at T. If ∠BAT=25° , then find ∠ABT



(1)114°
(2)115°
(3)116°
(4)117°

23. ∠BTA
(1)60°
(2)70°
(3)40°
(4)30°

24. If $\tan\theta = 8/15$ then , find the value of $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}}$.
(1)2/5
(2)7/5
(3)3/5
(4)3/2

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25. The angle of elevation of the top of a temple when seen from the bottom and top of a building 20 metre high is 60° and 30°. Find the height of the temple.

(1) 40m
(2) 30m
(3) 35m
(4) 60m

26. An incomplete frequency distribution table is given below :

The following frequency distribution table is given below.

Number of accidents	0	1	2	3	4	5	Total frequency
Frequency (Number of days)	45	f_1	f_2	25	10	5	200

(1) f_1 =78, f_2=37
(2) f_1 =70, f_2=37
(3) f_1 =78, f_2=33
(4) f_1 =78, f_2=38

27. The perimeter of two similar triangles are 20 cm and 16 cm respectively. If the length of one side of the first triangle is 9 cm, then find the length of the corresponding side of second triangle.

(1) 7cm
(2) 5cm
(3) 7.2cm
(4) 6cm

SECTION : BIOLOGY

This section contains **9 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

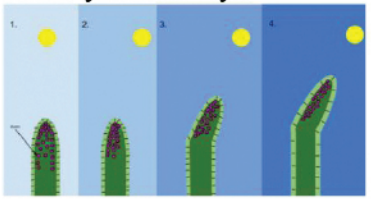
28. Consider the following statements regarding plant nutrients:
I. Zinc, Copper, and Molybdenum are macronutrients.
II. Phosphorus, Potassium, and Nitrogen are supplied by the soil.
III. Carbon and Oxygen are primarily obtained from water.
Which of the statements is/are incorrect?

(1) I and II only
(2) I and III only
(3) II and III only
(4) I, II, and III

29. which crossbreeding strategy is primarily used to develop a new breed of cattle that exhibits both a long lactation period and high resistance to diseases?

(1) Crossing two exotic breeds like Jersey and Brown Swiss.
(2) Crossing two indigenous breeds like Red Sindhi and Sahiwal.
(3) Crossing an exotic breed like Jersey with an indigenous breed like Red Sindhi.
(4) Inbreeding Red Sindhi cattle for 4-6 generations.

30. When a plant shoot is exposed to unilateral light, it bends towards the light source. This phototropic curvature is primarily caused by:



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(1) Accumulation of auxin on the illuminated side, stimulating rapid cell division.
(2) Degradation of auxin on the shaded side, causing cells to shrink.
(3) Lateral transport of auxin to the shaded side, causing those cells to elongate faster.
(4) Even distribution of gibberellins across the shoot apex.

31. Match the brain structures with their primary functions:
P. Medulla Oblongata - 1. Posture and balance
Q. Cerebellum - 2. Salivation and vomiting
R. Hypothalamus - 3. Thermoregulation
S. Cerebrum - 4. Voluntary muscle initiation

(1) P-2, Q-1, R-3, S-4
(2) P-1, Q-2, R-4, S-3
(3) P-3, Q-4, R-1, S-2
(4) P-2, Q-3, R-1, S-4

32. Which connective tissue is characterized by a matrix composed almost entirely of closely packed, thick collagen fibers running parallel to each other, offering great tensile strength but limited flexibility?

(1) Areolar tissue
(2) Hyaline cartilage
(3) Tendon
(4) Ligament

33. According to the fluid mosaic model of the cell membrane, which component is primarily responsible for the active transport of ions against their concentration gradient?

(1) Cholesterol molecules
(2) Phospholipid bilayer
(3) Integral transmembrane proteins
(4) Peripheral glycolipids

34. In the small intestine, end products of lipid digestion (fatty acids and glycerol) are absorbed into the lacteals primarily in the form of protein-coated droplets called:

(1) Micelles
(2) Chylomicrons
(3) Liposomes
(4) Glycolipids

35. Which phase of cellular respiration takes place exclusively in the cytoplasm and is common to both aerobic and anaerobic pathways?

(1) Krebs cycle
(2) Electron transport chain
(3) Glycolysis
(4) Oxidative phosphorylation

36. The BCG (Bacillus Calmette-Guérin) vaccine is administered to infants to provide immunity primarily against:

(1) Polio
(2) Diphtheria
(3) Tuberculosis
(4) Tetanus

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SECTION : IQ

This section contains **9 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

37. If A means +, B means −, C means × and D means ÷, find the value of:
24 D 6 C 3 A 8 B 4
(1) 12
(2) 16
(3) 20
(4) 24

38. Which letter is fifth to the right of the letter that is twelfth from the left in the English alphabet?
(1) P
(2) Q
(3) R
(4) S

39. If TABLE is coded as GZYOV using the reverse-alphabet rule (A ↔ Z, B ↔ Y, C ↔ X, and so on), how will CHAIR be coded?
(1) XSZRI
(2) XSAIR
(3) XSZIR
(4) XH ZRI

40. In a code language, SCHOOL is written as LOOHCS and MARKET is written as TEKRAM. How will TEACHER be written?
(1) REHCAET
(2) REHCEAT
(3) RAEH CET
(4) REHCAETT

41. Find the missing letter:
B, E, J, Q, ?
(1) X
(2) Y
(3) Z
(4) A

42. Book is related to Author in the same way as Painting is related to:
(1) Sculptor
(2) Artist
(3) Gallery
(4) Colour

43. Six people A, B, C, D, E and F sit in a circle facing the centre. A sits opposite D. B sits immediately clockwise from A. C sits immediately clockwise from B. Who sits opposite B?
(1) C
(2) D
(3) E
(4) F

44. Seven students are standing in a row facing north. M is fourth from the left. N is second to the right of M, while P is third to the left of N. What is P's position from the right?
(1) Third
(2) Fourth
(3) Fifth
(4) Sixth

45. Which relationship best represents Squares, Rectangles and Polygons?
(1) All squares are rectangles, all rectangles are polygons, and some polygons are not rectangles.
(2) All polygons are squares.
(3) All rectangles are squares.
(4) Squares and rectangles have no relationship.

46. In a class, 40 students play Cricket, 28 play Football, and 12 play both. How many students play at least one of the two games?

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(1) 56
(2) 60
(3) 68
(4) 80

47. In a class of 45 students, Riya ranks 12th from the top. What is her rank from the bottom?
(1) 32nd
(2) 33rd
(3) 34th
(4) 35th

48. A woman says about a boy, "His mother is the only daughter of my mother." How is the woman related to the boy?
(1) Sister
(2) Mother
(3) Maternal grandmother
(4) Aunt

49. Introducing a man, Priya says, "His wife is the only daughter of my father." How is the man related to Priya?
(1) Brother
(2) Husband
(3) Father
(4) Uncle

50. Study the sequence:
2 A 5 C 8 E 11 G 14 I 17 K
If all the numbers are removed, which letter will be fourth from the right?
(1) E
(2) G
(3) I
(4) K

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