SAMPLE PAPER

M-STAR

Momentum Scholarship Test for Admission & Rewards

10th Edition, 2025

Talent HUNT Exam

(Class IX Studying Moving to Class X)

Science, Mathematics & Mental Ability

INSTRUCTIONS FOR CANDIDATE

1. Duration of Test is 1 hr.
2. The Test Booklet consists of 40 questions. The maximum marks are 90. There is **no negative marking** for wrong answer.
3. **Pattern of the questions are as under:**

   The question paper consists of three subjects i.e., **Science, Mathematics and Mental Ability.** There are two sections in this question paper.

(i) **Section-I:** This section contains **35 multiple choice questions**, which have **only one correct** answer. Each question carries **+2 marks** for correct answer.

(ii) **Section-II:** This section contains 5 multiple choice questions, in which **one or more than one choice(s)** is/are correct. Each question carries **+4 marks** for correct answer.

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SECTION - I

This section contains **35 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct. Each question carries **+2 Marks** for correct answer.

1. Preeti reached the metro station and found that escalator was not working. She walked up the stationary escalator in time t_1. On other days, if she remains stationary on the moving escalator, then the escalator takes her up in time t_2. The time taken by her to walk up on the moving escalator will be -

(A) $\frac{t_1t_2}{t_2-t_1}$ (B) $\frac{t_1t_2}{t_2+t_1}$ (C) $t_1 - t_2$ (D) $\frac{t_1+t_2}{2}$

2. A particle of unit mass undergoes one-dimensional motion such that its velocity varies according to $\upsilon(x) = \beta x^{-2n}$, where β and n are constants and x is the position of the particle. The acceleration of the particle as a function of x is given by-

(A) $-2n\beta^2x^{-4n-1}$ (B) $-2n\beta^2x^{-2n+1}$ (C) $-2n\beta^2x^{-4n+1}$ (D) $-2n\beta^2x^{-2n-1}$

3. A small block slides without friction down an inclined plane starting from rest. If s_n be the distance travelled from time t = (n – 1) to t = n, the s_n / s_{n+1} is-

(A) $\frac{2n-1}{2n}$ (B) $\frac{2n+1}{2n-1}$ (C) $\frac{2n-1}{2n+1}$ (D) $\frac{2n}{2n+1}$

4. A force F acts on a stationary body for the time t. The distance covered by the body 'S' will be proportional to:

(A) t (B) $\frac{1}{t}$ (C) t^2 (D) $\frac{1}{t^2}$

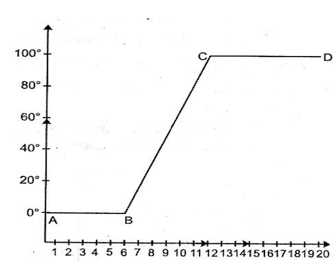
5. An electron of mass 9×10^{-31} kg is moving in a straight line path with a velocity of 6×10^7 ms^{-1}. The momentum of electron is :

(A) 5.4×10^{-23} Ns (B) 5.4×10^{-24} Ns (C) 4.5×10^{-23} Ns (D) 0.5×10^{-24} Ns

6. The orbital velocity of an artificial satellite in a circular orbit just above the surface of the earth is v_0. The value of the orbital velocity for another satellite orbiting at an altitude of half of earth's radius is :

(A) $\sqrt{\frac{3}{2}}v_0$ (B) $\sqrt{\frac{2}{3}}v_0$ (C) $\frac{2}{3}v_0$ (D) $\frac{1}{3}v_0$.

7. Which of the following is correct for water?



(A) Ab represents melting, CD represents boiling

(B) Ab represents boiling, CD represents melting

(C) Ab represents melting, BC represents boiling

(D) BC represents melting, CD represents boiling

8. The size of a colloidal particle is :

(A) 10^{-1} to 10^{-3} cm (B) 10^{-5} to 10^{-7} cm (C) 10^{-8} to 10^{-5} cm (D) 10^{-6} to 10^{-8} cm

9. Brass contains -

(A) Gold and copper (B) Copper and zinc (C) Zinc and silver (D) Copper and silver

10. ${}^{40}_{18}Ar$ and ${}^{40}_{20}Ca$ have the same number of

(A) Electron (B) Proton (C) Nucleons (D) A & C

11. Atomic mass of an element is :

(A) Actual mass of one atom of the element
(B) Relative mass of an atom of the element
(C) Average relative mass of different atoms of the element
(D) Always a whole number

12. A quantity of aluminium has a mass of 54.0 g. What is the mass of the same number of magnesium atoms? (At. wt. Al = 27, Mg = 24)

(A) 12.1 g (B) 23.3 g (C) 48 g (D) 97.2 g

13. The cell organelle taking part in photorespiration is-

(A) Glyoxysome (B) Dictyosome
(C) Peroxisome (D) Endoplasmic reticulum

14. Different layers of cell wall are -

(A) Middle lamella and primary wall (B) Primary wall and secondary wall
(C) Middle lamella, primary wall and secondary wall (D) Wall layers exclude middle lamella

15. Ribosomes contain large quantities of -

(A) Haemoglobin (B) Fatty acid
(C) Ribonucleic acid (D) Deoxyribonucleic acid

16. Epiblema bears :-

(A) Cutinised hair (B) Uncutinised hair (C) Root hair (D) Both (B) and (C)

17. Name the tissue where the cells are living, thin walled, isodiametric with intercellular spaces.

(A) Collenchyma (B) Parenchyma (C) Aerenchyma (D) Sclerenchyma

18. In desert plants, rate of water loss gets reduced due to the presence of :-

(A) Cuticle (B) Stomata (C) Lignin (D) Suberin

19. Which of the following is not a rational number :-

(A) $\sqrt{2}$ (B) $\sqrt{4}$ (C) $\sqrt{9}$ (D) $\sqrt{16}$

20. The surd $3\sqrt[4]{\sqrt[3]{5}} - \sqrt[3]{\sqrt[4]{5}}$ in its simplest form is equal to :-

(A) $2\sqrt[12]{5}$ (B) $\sqrt[12]{5}$ (C) $\sqrt[2]{5}$ (D) none of these

21. Which of the following equations is not linear equation :

(A) $2x + 3 = 7x - 2$ (B) $\frac{2}{3}x + 5 = 3x - 4$
(C) $x^2 + 3 = 5x - 3$ (D) $(x - 2)^2 = x^2 + 8$

22. The value of x satisfying the equation $x^2 + p^2 = (q - x)^2$ is :

(A) $\frac{p^2 - q^2}{2}$ (B) $\frac{q^2 - p^2}{2q}$ (C) $\frac{q^2 - p^2}{2}$ (D) $\frac{p^2 - q^2}{2q}$

23. The point (3, 2) is at a distance of _______________ units from y-axis :

(A) 2 units (B) 3 units (C) 5 units (D) None of these

24. The distance between the points (–4, 7) and (1, –5) is :

(A) $\sqrt{13}$ units (B) 13 units (C) $\sqrt{14}$ units (D) 14 units

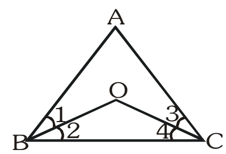
25. The sum of the two angles in a triangle is 95° and their difference is 25°. Then the angles of a triangle is :-

(a) 75°, 50°, 55° (b) 85°, 65°, 30° (c) 50°, 45°, 85° (d) 60°, 35°, 85°

26. In the figure, the bisector of B and C meet at O. Then $\angle$BOC is :-

(a) $90° + \frac{1}{2}\angle A$ (b) $90° + \frac{1}{2}\angle B$

(c) $90° + \frac{1}{2}\angle C$ (d) None of these



27. In a ΔABC, the sides AB and AC have been produced to D and E. Bisectors of $\angle$CBD and $\angle$BCE meet at O. If $\angle$A = 64°, then $\angle$BOC is :

(a) 52° (b) 58° (c) 26° (d) 112°

28. The coefficient of x^3 in the polynomial $5 + 2x + 3x^2 - 7x^3$ is

(a) 5 (b) 2 (c) 7 (d) –7

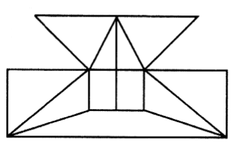
29. In a certain language, BREAKTHROUGH is written as EAOUHRBRGHKT, How is DISTRIBUTION written in that code?

(A) TISTBUONDIRI (B) STTIBUONRIDI (C) STTIBUDIONRI (D) None of these

30. If 0 = 16, FOR = 42, then what is FRONT equal to

(A) 61 (B) 65 (C) 73 (D) 78

Direction (Q. 31) : Find the minimum number of straight lines required to make each of the given figures.

31. 

(A) 16 (B) 17 (C) 18 (D) 19

32. What number should replace the question mark to follow a definite rule ?

$14 + 55 \rightarrow 69$; $28 + 23 \rightarrow 60$; $22 + 31 \rightarrow 35$

$17 + 28 \rightarrow 99$; $41 + 27 \rightarrow ?$

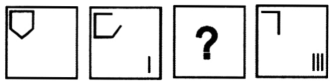
(A) 115 (B) 116 (C) 118 (D) 113

Direction (Q. 33) : Choose the number pair/group which is different from others.

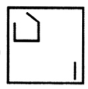
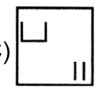
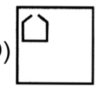
33. (A) 133 - 98 (B) 150 - 115 (C) 182 - 140 (D) 188 - 153

Direction (Q. 34 - 35) : There are given a set of four figures forming a certain series. However the one figure is missing choose the figure from the given alternatives.

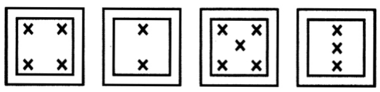
34. **Problem Figure**



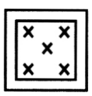
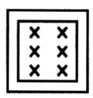
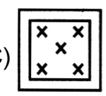
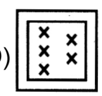
Answer Figures

(A)  (B)  (C)  (D) 

35. **Problem Figure**



Answer Figures

(A)  (B)  (C)  (D) 

SECTION - II

This section contains **5 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE OR MORE THAN ONE** choice(s) is/are correct. Each question carries **+4 makrs** for correct answer.

36. A satellite of mass m is put into a circular orbit of height h from the surface of the earth (mass = M_E, radius = R_E). The orbital speed of satellite is :

(A) $\sqrt{\frac{2GM_Eh}{R_E(R_E+h)}}$ (B) $\sqrt{\frac{2GM_E}{R_E+h}}$ (C) $\sqrt{\frac{GM_E}{R_E+h}}$ (D) $\sqrt{\frac{GM_E}{2(R_E+h)}}$

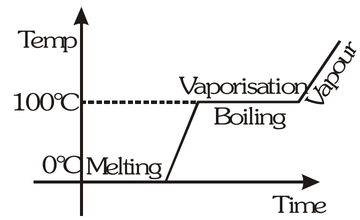
37. In an experiment of conversion of ice into water and water into vapour, observations were recorded and a graph plotted for temperature against time as shown below. From the graph it can be concluded that :-

(A) Ice takes time to heat up to 0°C

(B) During melting and boiling temperature does not rise

(C) Process of boiling takes longer time than the process of melting

(D) All the above



38. The youngest layer of secondary phloem in woody dicot stem is located :-

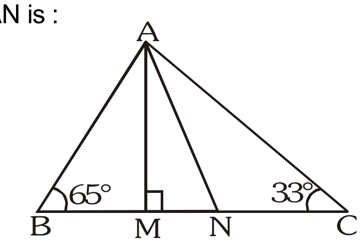
(A) Just outside the vascular cambium (B) Just on the inner side of cambium

(C) Between periderm and primary cortex (D) Just outside pith

39. In the given figure, AM $\perp$ BC and AN is the bisector of $\angle$A. Then $\angle$MAN is :

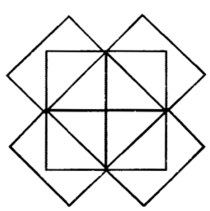
(a) $32\frac{1}{2}^\circ$ (b) $16\frac{1}{2}^\circ$

(c) 16° (d) 32°



Direction (Q. 40) : In each of the following questions, count the number of rectangles in the given figure :

40.



(A) 20 (B) 18 (C) 16 (D) 15

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