

Sample Paper

3 Year (Foundation)

Duration: 2.5 Hrs

Maximum Marks: 230

For Students Presently in Class 9th (Stream: Foundation)

PAPER SCHEME:

- This paper contains **45 Objective Type Questions** divided into four sections: **Section - I, Section - II, Section - III and Section - IV**
- **Section I** contains **5 Multiple Choice Questions (1-5)** based on **Mental Aptitude**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section II** contains **10 Multiple Choice Questions (6-15)** based on **Science**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section III** contains **20 Multiple Choice Questions (16-35)** based on **Mathematics**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section IV** contains **10 Numerical Value Type Questions (1-10)**. The answer to each of these questions ranges from 0 to 99.

MARKING SCHEME:

- **Section I** : For each question, **4 marks** will be awarded for correct answer and **-1 negative marking** for incorrect answer.
- **Section II & III** : For each question, **5 marks** will be awarded for correct answer and **-1 negative marking** for incorrect answer.
- **Section IV** : For each question, **6 marks** will be awarded for correct answer and **-1 negative marking** for incorrect answer.

SUGGESTIONS:

- Before starting the paper, spend 2-2.5 minutes to check whether all the pages are in order and report any issues to the invigilator immediately.
- Try to attempt the Sections in their respective order.
Do not get stuck on a particular question for more than 2 to 2.5 minutes. Move on to a new question as there are 45 questions to solve.

SECTION - I [MENTAL APTITUDE]

- In a certain code language, if the word "ADDRESS" is coded as ZCCQDRR, then how will you code the word "BUILDING" in that language?
(A) ATHKCHMF (B) ATHLCHMF (C) ATHKDHMF (D) ATHLDHNF
- If "SQUARE" = 87 and "RECTANGLE" = 94, then what is the value of "ROMBUS"?
(A) 96 (B) 94 (C) 89 (D) 97
- 5 children - P , Q , R , S and T are given ranks based on an essay writing competition. Neither S nor Q got the best rank. P has exactly one person who got a better rank than him. R is two ranks better than T . Who got the third lowest rank?
(A) R (B) S (C) Q (D) T
- | | | |
|----|----|----|
| 5 | 8 | 10 |
| 30 | 72 | ? |

(A) 110 (B) 90 (C) 120 (D) 130
- Samir walks 8 km towards North. Then he turns right and walks a further 8 km. How far and in what direction is he from the starting point?
(A) 10 km approx, North (B) 11 km approx, North-east
(C) 16 km approx, North-east (D) 14 km approx, North-east

SECTION - II [SCIENCE]

- A particle of mass 5 kg is moving with a constant velocity of 10 m/s along positive x -axis. The momentum of particle and the net external force acting upon the particle are respectively:
(A) 49 Ns, 3 N (B) 50 Ns, 0 N (C) 59 Ns, 2 N (D) 47 Ns, 1 N
- The unit of relative density is:
(A) $g\ cm^{-3}$ (B) $kg\ m^{-3}$ (C) $kg\ F\ m^{-3}$ (D) No unit
- The rate of change of displacement is called:
(A) Momentum (B) Speed (C) Velocity (D) Acceleration

9. The percentage of an element M is 52 in its oxide of molecular formula M_2O_3 . Its atomic mass is about:
(A) 45 (B) 9 (C) 18 (D) 26
10. The state of matter where matter is condensed is:
(i) Solid state (ii) Liquid state (iii) Gaseous state
(A) (i) and (iii) (B) (ii) and (iii) (C) (i) and (ii) (D) (i), (ii) and (iii)
11. Which of the following statements is not true about suspension?
(A) The particles of suspension can be separated from solvent by the process of filtration
(B) When the suspension is kept undisturbed, the particles of suspension settle down
(C) A suspension is homogeneous in nature
(D) Scattering of light takes place in suspension
12. Cell is a latin word for:
(A) A little room (B) A little life (C) A little brick (D) None of these
13. Free living cells in pond with improved microscope was discovered by:
(A) Robert Brown (B) Robert Hooke (C) Leeuwenhoek (D) George Palade
14. Simple permanent tissues are:
(A) Parenchyma (B) Collenchyma (C) Sclerenchyma (D) All of these
15. Cardiac and skeletal muscles are respectively:
(A) Voluntary and involuntary muscles (B) Involuntary and voluntary muscles
(C) Voluntary and voluntary muscles (D) Involuntary and involuntary muscles

SECTION - III [MATHEMATICS]

16. Let $x = 2 + \sqrt{3}$, then the value of $x^2 + \frac{1}{x^2}$ is:
(A) 12 (B) 14 (C) 16 (D) 10
17. If $p(x) = x^4 - k^2x^2 + 3x - k$, then the value of 'k' for which $x + k$ is a factor of $p(x)$, is:
(A) 1 (B) -1 (C) 0 (D) 2
18. If $(2\alpha - 1, \alpha)$ is a solution of $9y = 10x - 12$, then ' α ' is equal to:
(A) 1 (B) 2 (C) 3 (D) 4
19. The mean of 10 numbers is '20'. If 5 is subtracted from every number, then the new mean is equal to:
(A) 10 (B) 12 (C) 16 (D) 15

20. If each edge of a cuboid of surface area 54 cm^2 is doubled, then surface area of new cuboid is:
(A) 212 cm^2 (B) 216 cm^2 (C) 218 cm^2 (D) 222 cm^2
21. If $\sqrt{13 - a\sqrt{10}} = \sqrt{8} + \sqrt{5}$, then a is one of the zero of the polynomial:
(A) $x^2 - 3x + 2$ (B) $x^2 - 7x + 12$ (C) $x^2 + 7x + 12$ (D) $x^2 + 3x + 2$
22. A person sells a T.V. at Rs. 10000 making a profit of 25% and a fridge at Rs. 20000 making a loss of 20%, then overall:
(A) Profit is Rs. 3000 (B) Loss is Rs. 5000
(C) Loss is Rs. 3000 (D) Profit is Rs. 5000
23. In a ΔPQR , $PQ = PR$ and QR is produced to S such that $\angle PRS = 100^\circ$, then $\angle P$ is:
(A) 20° (B) 40° (C) 60° (D) 80°
24. Two cones have their volumes in the ratio of 2 : 1 and their heights in ratio 1 : 2, then the ratio of their radii is:
(A) 1 : 2 (B) 2 : 1 (C) 1 : 4 (D) 4 : 1
25. The area of three adjacent faces of a cuboid are 6 cm^2 , 8 cm^2 and 12 cm^2 , then volume of the cuboid is:
(A) 12 cm^3 (B) 32 cm^3 (C) 28 cm^3 (D) 24 cm^3
26. What is the missing number X in the series: 2, 3, 10, 15, X, 35?
(A) 20 (B) 25 (C) 26 (D) 28
27. The time at which hands (minute and hour hands) of a clock are together between 3 pm and 4 pm, is:
(A) $3/11$ hour past 3 pm (B) $4/11$ hour past 3 pm
(C) $5/11$ hour past 3 pm (D) $6/11$ hour past 3 pm
28. Professor Rao walks to the market and comes back in an auto. It takes him 150 minutes to make the round trip. If he takes an auto for round trip, it takes him 50 minutes. On Sunday, he decides to take a round trip by walk. How long would it take him?
(A) 200 minutes (B) 250 minutes (C) 300 minutes (D) 60 minutes
29. While travelling from A to B, wheels of a bus makes 1250 revolutions. Distance between A and B is 2.2 km. Find the radius of wheels.
(A) 30 cm (B) 32 cm (C) 28 cm (D) 26 cm
30. A shopkeeper inflates his price by 10% and uses weight which are 20% less than the actual weight. The total profit earned by him will be:
(A) 30% (B) 88% (C) 37.5% (D) 40%

31. If 12 men or 8 women can do a piece of work in 52 days, then in how many days can 8 men and 12 women do the same piece of work?
 (A) 28 days (B) 24 days (C) 25 days (D) 30 days
32. Sahu, Rahu and Umang can do a piece of work in 10, 15 and 20 days respectively. If they all work together for 3 days, then fraction of the work that is left, is:
 (A) $1/20$ (B) $1/15$ (C) $7/20$ (D) $1/4$
33. If H is height, S is curved surface area and V is volume of a cone, then:
 (A) $\pi VH^3 - SH^2 + V^2 = 0$ (B) $3\pi VH^3 + V^2 = S^2 H^2$
 (C) $3\pi VH^3 + 9V^2 = S^2 H^2$ (D) $3\pi VH^3 - 9V^2 = S^2 H^2$
34. If $x = m^2$ and $y = m$ is a solution of the equation $x - 5y + 6 = 0$, then the ratio of greatest value of m to least value m is:
 (A) 3 : 2 (B) 4 : 3 (C) 5 : 2 (D) 2 : 1
35. In $\triangle LMN$, $\angle M = 2\angle N$. P is a point on MN such that LP bisects $\angle MLN$ and $MN = NL$, then:
 (A) $\angle MLN = 48^\circ$ (B) $\angle MLN = 60^\circ$ (C) $\angle MLN = 72^\circ$ (D) $\angle MLN = 36^\circ$

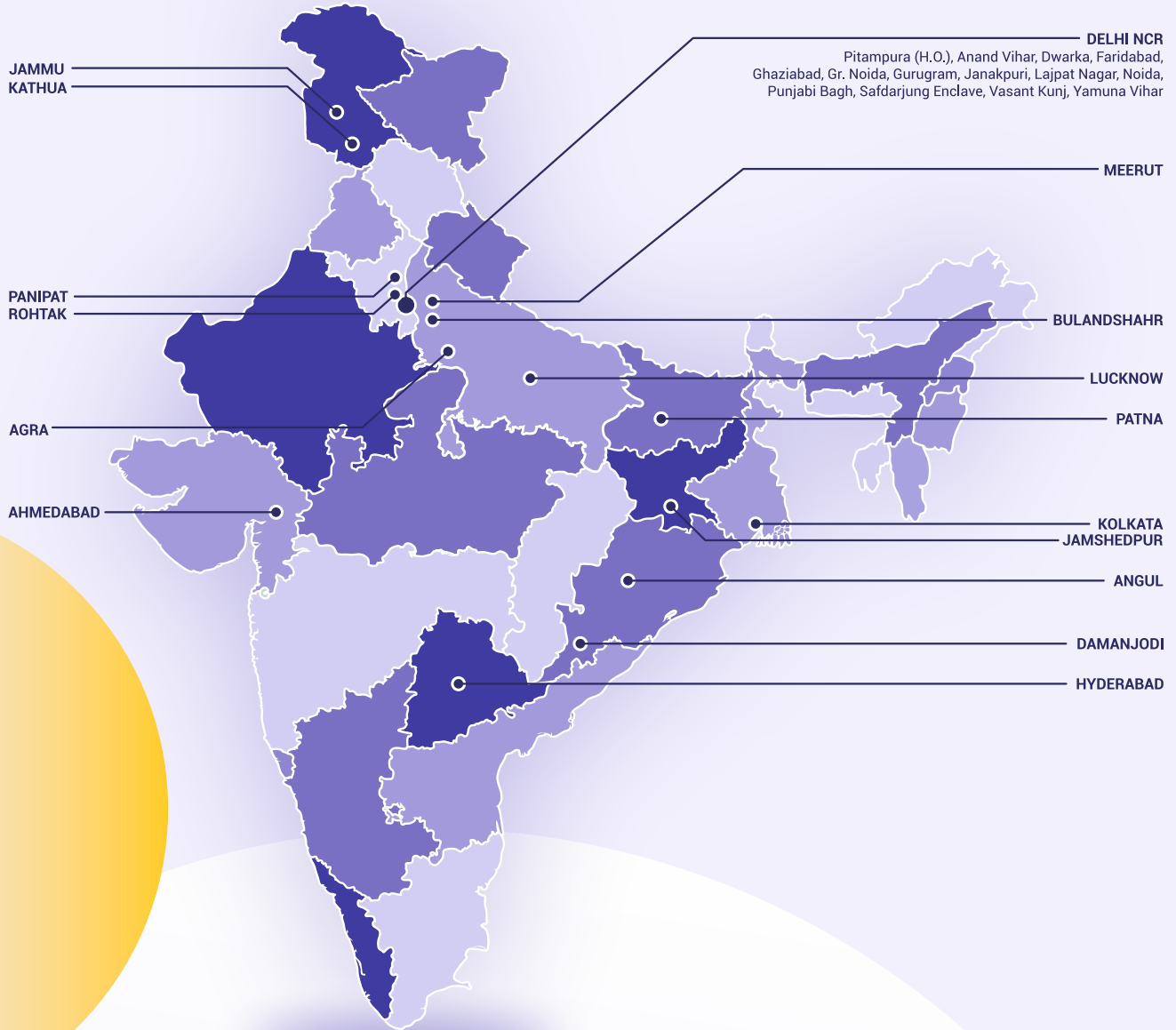
SECTION - III [NUMERICAL VALUE TYPE QUESTION]

This Section contains 10 Integer Type Questions. Each question has an integer answer between 0 and 99. Enter the correct Numerical Value.

1. If $x = \frac{1}{\frac{1}{9^3 - 3^3} + 1}$, then the value of $64x^3 - 48x^2 + 12x$ is _____.
2. If $a - b = 4$ and $b - c = 3$, then the value of $(a^2 + b^2 + c^2) - (ab + bc + ca)$ is _____.
3. ABC is a right triangle with $AB = AC$. If bisector of $\angle A$ meets BC at D and $AD = 2\sqrt{2}$ cm and the perimeter of $\triangle ABC$ is $(p + q\sqrt{2})$ cm, then the value of pq is _____.
4. In $\triangle ABC$, OB and OC are the interior angle bisectors of $\angle B$ and $\angle C$ respectively. PB and PC are the exterior angle bisectors of $\angle B$ and $\angle C$ respectively. If $\angle A$ equals supplement of 108° and $\frac{\angle BOC}{\angle BPC} = \frac{m}{n}$ (where m and n are co-primes), then the value of $m + n$ is _____.
5. For how many positive integers n , is $n^2 - 3n + 2$ a prime number? _____.

6. If $N = \sqrt{97 \times 98 \times 99 \times 100 + 1}$, then the value of $(\sqrt{N - 97} + 23)^{1/2}$ is _____.
7. $ABCD$ is a trapezium in which $AB \parallel DC$ and $AB > CD$. If EF is its median and X, Y are mid-points of its diagonals, then the value of $\sqrt{\frac{AB^2 - CD^2}{EF \times XY}}$ is _____.
8. In the xy -plane, let A be the point $(5,0)$ and L be the line $y = \frac{x}{3}$. The number of points P on the line L such that triangle OAP is isosceles is _____. (O being the origin)
9. The adjacent sides of a parallelogram are 30 cm and 20 cm . The length of one of the diagonals is 40 cm . If length of the other diagonal is $\sqrt{k} \text{ cm}$, then $\frac{k}{50}$ is _____.
10. If a and b are positive integers ($a > b$ and a, b are co-primes) such that $a\sqrt{a} + b\sqrt{b} = 341$ and $a\sqrt{b} + b\sqrt{a} = 330$. If $\frac{a}{b} = \frac{m}{n}$, then the value of $n+m$ is _____.

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