

PACE - IIT & MEDICAL

Delhi/ Ghaziabad /Mumbai/ Pune / Goa/ Akola/ Nashik/ Kolkata / Lucknow / Bokaro/ Dubai

Admission cum Scholarship Test for SUPER-50

Standard: 10th (Engg.)

Set - 1

DURATION: 1 HOUR

TOTAL MARKS: 120

INSTRUCTIONS: {Paper consists of the following sections}

Section - I : Mathematics : Q. No. **01 to 10**

Section - II : Science : Q. No. **11 to 20**

Section - III : Mental Ability : Q. No. **21 to 30**

1. This booklet is your question paper. Answers have to be marked on the provided OMR sheet.
2. Space for rough work is provided in the question paper.
3. Log tables, Slide rule, Calculators, Cellular phones and other Electronic devices in any form are NOT allowed in the examination hall.
4. If a student is caught copying, he / she will not be allowed to write the exam.
5. On the OMR sheet, write your name, roll number, mobile number, paper code and put your signature in the appropriate boxes.
6. There are total 30 questions in this paper. Only one choice is correct. Each question carries **+4** for correct answer & **0** for wrong answer.

**NOTE: THE RESULT WILL BE ANNOUNCED ON 5TH OCTOBER 2025
AT PACE RDC CENTRE**

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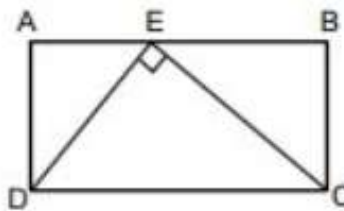


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MATHEMATICS

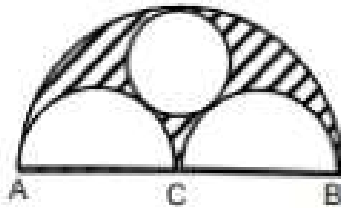
- If $2^x = 4^y = 8^z$ and $\frac{1}{2x} + \frac{1}{4y} + \frac{1}{6z} = \frac{24}{7}$, then the value of z is
 (a) $\frac{7}{16}$ (b) $\frac{7}{32}$ (c) $\frac{7}{48}$ (d) $\frac{7}{64}$
- The sum of two numbers is 20, their product is 40. The sum of their reciprocal is
 (a) $\frac{1}{2}$ (b) 2 (c) 4 (d) $\frac{1}{10}$
- If roots of quadratic equation $x^2 + px + q = 0$ are $\tan 30^\circ, \tan 15^\circ$ respectively then value of $2 + p - q = ?$
 (a) 1 (b) 2 (c) 3 (d) 0
- $\cos \theta = \frac{3}{5}$; then value of $\frac{\sin \theta \cdot \tan \theta + 1}{2 \tan^2 \theta} =$
 (a) $\frac{88}{160}$ (b) $\frac{91}{160}$ (c) $\frac{92}{160}$ (d) $\frac{93}{160}$
- Find the ratio in which (2, 1) divides the line joining (1, -2) and (4, 7) _____.
 (a) 2 : 1 (b) 1 : 2 (c) 1 : 3 (d) 3 : 1
- In the diagram, ABCD is a rectangle and point E lies on AB. Triangle DEC has $\angle DEC = 90^\circ$, $DE = 3$ and $EC = 4$. The length of AD is:



- (a) 2.4 (b) 2.8 (c) 1.8 (d) 3.2

SPACE FOR ROUGH WORK

7. If 7 times the 7th term of an A.P. is equal to 11 times its 11th term, then 18th term is
 (a) 18 (b) 9 (c) 77 (d) 0
8. If α and β are the zeros of quadratic polynomial $x^2 - (\sqrt{5} - 1)x - (\sqrt{5} + 1)$ then value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2} =$
 (a) $3 + \sqrt{5}$ (b) $3 - \sqrt{5}$ (c) $\sqrt{5} - 3$ (d) $-3 - \sqrt{5}$
9. In the given figure, the diameter of the biggest semi-circle is 56 cm and the radius of the smallest circle is 7 cm, then find the area of the shaded portion



- (a) 462 cm² (b) 231 cm² (c) 924 cm² (d) None of these
10. A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm, and the diameter of the base is 4 cm. Determine the volume of the toy. If a right circular cylinder circumscribes the toy, find the difference between the volumes of the cylinder and the toy. (Take $\pi = 3.14$)
 (a) 50.15 cm³ (b) 25.12 cm³ (c) 35.15 cm³ (d) 40.12 cm³

SCIENCE

11. When light rays enter the eye, most of the refraction occurs at the
 (a) Crystalline lens
 (b) Outer surface of the cornea
 (c) Iris
 (d) Pupil
12. The highest refractive index is of
 (a) Glass (b) Water (c) Diamond (d) Ruby

SPACE FOR ROUGH WORK

13. Name the quantity which is measured by the gradient of the distance-time graph.
(a) Velocity (b) Distance (c) Acceleration (d) Speed
14. An astronaut with all her equipments has a mass of 95 kg. How much will she weight on the moon, where the acceleration due to gravity is 1.67 m/s^2 .
(a) 159 N (b) 169 N (c) 149 N (d) 100 N
15. In which part of the human eye is the image of an object formed?
(a) Iris (b) Pupil (c) Retina (d) Cornea
16. The metal which does not displace hydrogen from dil. HCl is:
(a) Ag (b) Mg (c) Al (d) Fe
17. What are the end products of the reaction $\text{Ca(OH)}_2 + \text{CO}_2$
(a) $\text{CaO} + \text{CO}_2 + \text{H}_2\text{O}$ (b) $\text{CaCO}_3 + \text{H}_2\text{O}$
(c) $\text{CaCO}_3 + \text{CO}_2$ (d) None of these
18. A student performs an experiment to form aluminium chloride from aluminium and chlorine. Which of the following option gives the chemical equation of the reaction?
(a) $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_2$ (b) $2\text{Al} + \text{Cl}_2 \rightarrow 2\text{AlCl}$
(c) $2\text{Al} + 3\text{Cl}_2 \rightarrow 2\text{AlCl}_3$ (d) $3\text{Al} + 3\text{Cl}_2 \rightarrow 3\text{AlCl}_3$
19. Acids react with metallic oxides to form
(a) Salt and Carbon dioxide (b) Sugar and Water
(c) Salt and Water (d) None of these
20. Remedy for indigestion due to excess acid is
(a) Citric Acid (b) Vinegar
(c) Magnesium Hydroxide (d) None of these

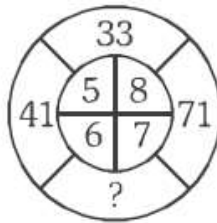
SPACE FOR ROUGH WORK

MENTAL ABILITY – (MAT)

21. Find the missing term from the given alternative



- (a) 27 (b) 35 (c) 54 (d) 64
22. Find the next term from the given series.
15, 35, 77, 143, 221, _____
- (a) 321 (b) 323 (c) 437 (d) 187
23. Find the missing character from the given figure.



- (a) 55 (b) 255 (c) 51 (d) 83
24. In a certain code language, if the value of $38 + 15 = 66$ and $29 + 36 = 99$, then what is the value of $82 + 44$?
- (a) 77 (b) 80 (c) 88 (d) 92
25. What is the least number of coins required to make one rupee from different coins of 1, 5, 10 and 25 paise, so that you have at least one coin of each type?
- (a) 4 (b) 7 (c) 11 (d) 12

SPACE FOR ROUGH WORK

26. David sets his watch at 6:10 a.m. on Sunday, which gains 12 minutes in a day. On Wednesday if this watch is showing 2:50 p.m., what is the correct time?
- (a) 1:50 p.m. (Wed) (b) 2:10 p.m. (Wed)
(c) 2:30 p.m. (Wed) (d) 3:30 p.m. (Wed)

27. There is a definite relationship in the first two figures. Find out the appropriate answer figure to maintain the same type of relationship in the next two figures.



- (a) (b) (c) (d)

28. If in a coded language the word 'RAMESH' is written as 'AEHMRS' then in the same code language 'POET' will be written as
- (a) EPTO (b) PEOT (c) ETOP (d) EOPT

29. In the question given below, two signs in given equation have been interchanged. Find out these two signs to make the equation correct. $3^2 \times 2^2 \div (6^2 - 9) + 1^2 = 33$
- (a) – and ÷ (b) + and × (c) × and ÷ (d) + and –

30. In the following question, one term in the number series is wrong. Find out the wrong term.
125, 126, 124, 127, 123, 129
- (a) 126 (b) 124 (c) 123 (d) 129

SPACE FOR ROUGH WORK