

Time: 2 ½ hours

You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

Attempt all questions from Section A and any four questions from Section B.

All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer.

Omission of essential working will result in loss of marks.

The intended marks for questions or parts of questions are given in brackets [].

SECTION A (40 Marks)

Attempt all questions from this Section.

Question 1 Choose the correct answers to the questions from the given options: 15

1. Decimal representation of a rational number CANNOT be:
 - (a) Terminating
 - (b) Non-Terminating
 - (c) Non-terminating repeating
 - (d) Non-terminating non-repeating
2. How much Rs. 6000 amount to in 2 years at compound interest if the rates for successive years are 4% and 5%?
 - (a) Rs. 6556
 - (b) Rs. 6555
 - (c) Rs. 6552
 - (d) Rs. 6554
3. The coefficient of x^2 in the expansion $(x + 3)^2$ is:
 - (a) 1
 - (b) 9
 - (c) 27
 - (d) -9
4. $\frac{451 \times 449 + 1}{450^2} = ?$
 - (a) 1634
 - (b) 8
 - (c) 1
 - (d) 450
5. If $a^m = a^n$ then which of the following is true?
 - (a) $m=n$
 - (b) $m=-n$
 - (c) $m+n=1$
 - (d) $m-n=1$
6. A two-digit number with ten's digit x and unit's digit y can be represented as:
 - (a) $10x+y$
 - (b) $10y+x$
 - (c) $x+y$
 - (d) xy
7. If $\triangle ABC \cong \triangle PQR$ and $\triangle ABC \not\cong \triangle RPQ$, which of the following is NOT true: (a) $AC = PR$ (b) $BC=PQ$ (c) $AB =PQ$ (d) $BC=QR$
8. The value of x in $\log_x \frac{1}{8} = 3$ is:
 - (a) $x = \frac{1}{2}$
 - (b) $x = 2$
 - (c) $x = -2$
 - (d) $x = -\frac{1}{2}$
9. The value of x so that $2x+5=25$ is:
 - (a) 0
 - (b) 10
 - (c) 5
 - (d) 15
10. M and N are mid points of sides AB and AC of $\triangle ABC$. If $MN = 2x - 5$ and $BC = x + 2$, then:
 - (a) $x = 4$
 - (b) $x = 7$
 - (c) $x = 8$
 - (d) Cannot be determined
11. Which of the following is NOT a Pythagorean triplet?
 - (a) (5,12,13)
 - (b) (9,40,41)
 - (c) (11,60,62)
 - (d) (3,4,5)
12. Which of the following statements is true?
 - (a) A trapezium is a parallelogram
 - (b) Every rectangle is a parallelogram
 - (c) Every parallelogram is a rectangle
 - (d) Every rhombus is a square
13. Which of the following is an irrational number?
 - (a) $1.342\bar{7}$
 - (b) $\sqrt{\frac{4}{9}}$
 - (c) $5.787788777888\dots$
 - (d) $\sqrt{16}$
14. Fill in the blank to make a perfect square: $4x^2 - \underline{\hspace{1cm}} + 49$
 - (a) $2x$
 - (b) $14x$
 - (c) $7x$
 - (d) $28x$
15. $3x^2 - 13x + 12$ can be factorised as:
 - (a) $(x+3)(3x+4)$
 - (b) $(x-3)(3x-4)$
 - (c) $(x-12)(x+3)$
 - (d) $(x-3)(x-12)$

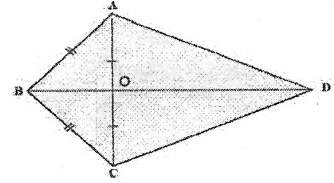
Question 2

- i. In a scheme, Rs. 8,000 is lent at 5% compound interest per year for 2 years. Find the amount and compound interest at the end of the scheme. 4
- ii. Solve for x and y : 4
 $3x - 4y = 10$ and $5x - 3y = 24$
- iii. A ladder is placed against a wall in such a way that its foot is at a distance of 10 m from the wall. If the ladder reaches at a height of 24 m on the wall, find the length of the ladder. 4

Question 3

- i. Find two rational and two irrational numbers between 3 and 4. 4

- ii. Factorise: (a) $25x^2 - 9y^2$ (b) $a(a - 4) - a + 4$ 4
 iii. In the given figure, $OA=OC$ and $AB=BC$. Prove that: 5



- a) $\triangle AOB \cong \triangle COB$
 b) $\angle ABO = \angle CBO$
 c) $\angle AOB = \angle COB = 90^\circ$
 d) $\triangle AOD \cong \triangle COD$
 e) $AD=CD$

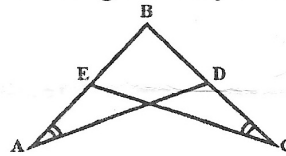
SECTION B (40 Marks)

Attempt any four questions from this Section

- Question 4**
 i. Write the following terms in ascending order: $4\sqrt{3}, \frac{6}{\sqrt{3}}, \sqrt{75}, \sqrt{27}$ 3
 ii. Evaluate using suitable identities: 3
 (a) $(10.1)^2$
 (b) 99×101
 iii. The sum of the present ages of Arun and Karan is 64 years. Arun is 7 years older than Karan. Find their present ages. 4

- Question 5**
 i. Evaluate using rules of indices: 3
 $7^0 \times (25)^{-\frac{3}{2}} - 5^{-3}$
 ii. Solve for x: $\log_{\sqrt{27}} x = 2\frac{2}{3}$ 3
 iii. If $a^2 + b^2 = 40$ and $ab=12$; then find: $3(a + b)^2 + 5(a - b)^2$ 4

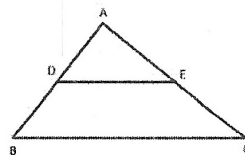
- Question 6**
 i. In $\triangle ABC$, $\angle B = 90^\circ$. Find the sides of the triangle, if $AB=(x-3)$ cm $BC=(x+4)$ cm and $AC=(x+6)$ cm. 3
 ii. What is the subject in the formula $A=\pi r^2$? Change the subject to r. 3
 iii. In the given figure, $\angle A = \angle C$ and $AB=BC$. Prove that $\triangle ABD \cong \triangle CBE$. 4



- Question 7**
 i. In how many years will Rs.7000 amount to Rs.9317 at 10% p.a. compound interest? 3
 ii. Factorise: 3
 (a) $8x^2 - 200y^2$ (b) $x^2 + y^2 + x + y + 2xy$
 iii. What is the value of $\log_{10} 10$? Evaluate: $1+3 \log_{10} 5 + 3 \log_{10} 2$ 4

- Question 8**
 i. Solve for x: $3(5 - x) - 2(5 + x) = 3(x + 1)$ 3
 ii. Given that ABCD is a parallelogram, with $\angle A = 3x - 20^\circ$ and $\angle C = x + 40^\circ$, find the value of x. 3
 iii. Simplify: $(3x^2)^{-3} \times (x^9)^{\frac{2}{3}}$ 4

- Question 9**
 i. Expand: $(x - 2y + 2)^2$ 3
 ii. If the numerator of a fraction is decreased by 1 its value becomes $\frac{2}{3}$, but if the denominator is increased by 5, its value becomes $\frac{1}{2}$. Find the fraction. 3
 iii. In the given figure, D and E are the mid-points of AB and AC sides of $\triangle ABC$ respectively. Given that $BC=6$ cm, $AB=8$ cm and $AC=7$ cm, calculate the perimeter of trapezium DBCE. 4



- Question 10**
 i. In right-angled $\triangle ABC$, $\angle B = 90^\circ$, $AB=8$ cm and $AC+BC=32$ cm. Find AC and BC. 3
 ii. L and M are the mid-points of sides AB and DC respectively of parallelogram ABCD. Prove that segments DL and BM trisect diagonal AC. 3
 iii. If $\angle A$ of parallelogram ABCD is two - third of its adjacent angle $\angle B$, find all the angles of the parallelogram. 4
