

Mathematics (New)

9th (Fresh/Reappear)

Note: Time allowed for Section - B and Section - C is 2 Hours and 40 minutes.

Section - B

Marks: 36

Q-II Attempt any NINE parts. Each part carries FOUR marks.

1. For $X = \begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$, $Y = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ evaluate $3X - 2Y$

2. Solve without using calculator, $\log_x(0.001) = -3$

3. Divide $\frac{x^2 + x - 2}{3x^2 + 9x + 6}$ by $x - 1$

4. If $u - v = 3$ then prove that $u^3 - v^3 - 9uv = 27$

5. Using long division, find the quotient and remainder when $x^3 + 2x^2 - 3x + 1$ is divided by $x + 2$.

6. Find the multiplicative inverse of $M = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

7. Evaluate $\frac{2x - 3}{x^2 - x + 1}$ for $x = 2$

8. Factorize $25a^2b^2 - 20abc + 4c^2 - 16d^2$

9. Solve $\frac{8x + 1}{2} < 2x$; $x \in \mathbb{R}$

10. Draw a parallelogram by joining the points $A(0,0)$, $B(1,4)$, $C(4,2)$, $D(3, -2)$

11. Find the square root of $4x^4 - 4x^3 + 13x^2 - 6x + 9$ by division method.

12. If $x + \frac{1}{x} = 3$, evaluate $x^3 + \frac{1}{x^3}$

Section - C

Marks: 24

Note: Attempt any THREE questions. All questions carry equal marks.

Q-III Prove that any point on the bisector of an angle is equidistant from its arms.

Q-IV Prove that from a point outside a line, the perpendicular is the shortest distance from the point to the line.

Q-V If a line segment intersects the two sides of a triangle in the same ratio, then it is parallel to the third side.

Q-VI Construct a rectangle ABCD, with adjacent sides 2.5 cm and 5 cm respectively.