

Time: 2 Hours 40 Minutes

SECTION-B

Marks: 36.

2. Attempt any nine of the following. All carry equal marks.

i. If $A = \begin{bmatrix} 0 & -1 \\ 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix}$, show that $(BA)^{-1} = A^{-1}B^{-1}$

ii. Solve $x - 2y = 5$, $2x - y = 6$ by Cramer's rule.

iii. Prove that $\left(\frac{4^5 \cdot 64^3 \cdot 2^3}{8^5 \cdot (128)^2}\right)^{\frac{1}{3}} = 2$

iv. Find the value of x from the following equation $\log x = \bar{3}.0253$

v. If $x + y = 11$ and $x - y = 3$, find $8xy(x^2 + y^2)$

vi. Factorize $(x+1)^2 + 3(x+1) + 2$

vii. Factorize $x^9 + 1$

viii. Find the square root of $16x^4 - 24x^3 + 25x^2 - 12x + 4$

ix. If $x = \sqrt{10} + 3$ find the value of $x - \frac{1}{x}$ and $x^2 + \frac{1}{x^2}$

x. Solve $3x + \frac{x}{5} - 5 = \frac{1}{5} + 5x$

xi. Solve for x , $\left|\frac{3x-2}{5}\right| = 7$

xii. Find the LCM of $x^2 + 4x + 4$ and $x^2 + 5x + 6$

SECTION-C

Marks: 24

NOTE: Attempt any three of the following questions. All questions carry equal marks.

3. Prove that the points $A(-2, -2)$, $B(4, -2)$ and $C(4, 6)$ are the vertices of a right triangle.

4. Show that if two angles of a triangle are congruent, then the sides opposite to these angles are congruent.

5. Prove that if the square of one side of a triangle is equal to the sum of the square of the other two sides, then the triangle is a right angled triangle.