

(Group - I)

2. Write short answers to any SIX (6) questions: (12)

- i. Define matrix.
- ii. Find the product of  $\begin{bmatrix} 3 & 0 \\ 4 & 0 \end{bmatrix}$
- iii. Simplify:  $(x^3)^2 \div x^{3^2}$
- iv. Simplify by using laws of indices:  $\left(\frac{8}{125}\right)^{-4/3}$
- v. Find the value of x when  $\log_{81} 9 = x$
- vi. Write  $\log 25 - 2\log 3$  in the form of a single logarithm.
- vii. If  $a + b = 10$  and  $a - b = 6$ , find the value of  $(a^2 + b^2)$
- viii. Evaluate  $\frac{x^3y - 2z}{xz}$  while  $x = 3, y = -1, z = -2$
- ix. Factorize:  $3x^2 - 243x^3$

3. Write short answers to any SIX (6) questions: (12)

- i. Use factorization to find the square root:  $4x^2 - 12xy + 9y^2$
  - ii. Solve:  $|2x + 5| = 11$
  - iii. Solve the inequality:  $4x - 10.3 \leq 21x - 1.8$
  - iv. Verify whether the point (2, 3) lies on the line  $2x - y + 1 = 0$  or not?
  - v. Define ordered pair of real number.
  - vi. Define collinear points.
  - vii. Find the distance between the pair of points: A(6,3), B(3,-3)
  - viii. Define S.A.S postulate.
  - ix. Define parallelogram.
4. Write short answers to any SIX (6) questions: (12)
- i. Define angle bisector.
  - ii. What will be angle for shortest distance from an outside point to the line?
  - iii. Define similar triangles.
  - iv. Define Pythagoras Theorem.
  - v. Define triangular region.
  - vi. Define centroid of a triangle.
  - vii. Find the value of x in the given figure:
  - viii. Find the area of the given figure:
  - ix. Construct a  $\triangle ABC$  in which:  
 $m\overline{AB} = 4.2, m\overline{BC} = 3.9\text{cm}, m\overline{CA} = 3.6\text{cm}$

PART - II

Note: Attempt any TWO questions.

- 5.(a) If  $B = \begin{bmatrix} 3 & -1 \\ 2 & -2 \end{bmatrix}$ , then find  $B^{-1}B$
- (b) Simplify  $\frac{a^{2l}}{2^{l+m}} \left( \frac{a^{2m}}{a^{m+n}} \right) \left( \frac{a^{2n}}{a^{n+l}} \right)$
- 6.(a) Use log table to find the value of  $\frac{0.678 \times 9.01}{0.0234}$
- (b) If  $5x - 6y = 13$  and  $xy = 6$ , then find the value of  $125x^3 - 216y^3$
- 7.(a) For what value of m is the polynomial  $p(x) = 4x^3 - 7x^2 + 6x - 3m$  exactly divisible by  $x + 2$
- (b) Simplify to the lowest form:  
 $\frac{x^4 - 8x}{2x^2 + 5x - 3} \times \frac{2x - 1}{x^2 + 2x + 4} \times \frac{x + 3}{x^2 - 2x}$
8. (a) Solve the equation  $\frac{5(x - 3)}{6} - x = 1 - \frac{x}{9}$
- (b) Construct a  $\triangle ABC$  in which:  
 $m\overline{AB} = 4.2, m\overline{BC} = 6\text{cm}, m\overline{CA} = 5.2\text{cm}$

9. Prove that the bisectors of the angle of a triangle are concurrent.  
 OR  
 Prove that parallelograms on the same base and between the same parallel lines (or of the same altitude) are equal in area.