

(Group - I)

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

i. What do you mean by order of a matrix?

ii. If $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ then verify that $(A^t)^t = A$

iii. Simplify by using laws of indices: $\left(\frac{8}{125}\right)^{-4/3}$

iv. Simplify: $\sqrt{25x^{10n}y^{8m}}$

v. Find the value of x when $\log_3 x = 4$

vi. Calculate using laws of logarithm: $\log_2 3 \times \log_3 8$

vii. If $a + b = 7$ and $a - b = 3$, find the value of $4ab$

viii. Simplify: $\sqrt[5]{243x^5y^{10}z^{15}}$

ix. Factorize: $12x^2 - 36x + 27$

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 the equation: $\frac{2}{3}x - \frac{1}{2}x = x + \frac{1}{6}$

iii. Solve: $|2x + 5| = 11$

iv. Find the value of m and c of the line $2x + 3y - 1 = 0$ by expressing it in the form $y = mx + c$

v. Verify whether the point $(-1, 1)$ lies on the line $2x - y + 1 = 0$ or not?

vi. Define right angled triangle.

vii. Find the distance between the pair of points: $A(-8, 1), B(6, 1)$

viii. What is meant by $H.S \cong H.S$?

ix. Find the value of unknown m and x :

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

i. In the given congruent triangle LMO and LNO, find unknown x and m:

ii. If 3cm and 4cm are lengths of two sides of a right angle triangle then what should be the third length of the triangle?

iii. Define congruent triangles.

iv. The three sides of triangle are 8, x and 17, For what value of x will it become base of right angled triangle?

v. Verify that the measures of sides are right angled triangle or not $a = 5cm, b = 12cm, c = 13cm$

vi. Define altitude of triangle.

vii. Find the area of given figure.

viii. Construct a $\triangle ABC$ in which:
 $m\overline{AB} = 3cm, m\overline{AC} = 3.2cm, m\angle A = 45^\circ$

ix. Define centroid.

PART - II

Note: Attempt any TWO questions.

5.(a) Use the matrix inversion method to solve linear equation:

$$4x + 2y = 8$$

$$3x - y = -1$$

(b) Use laws of exponent to simplify:

$$\frac{(81)^n \cdot 3^5 - (3)^{4n-1} (243)}{(9^{2n})(3)^3}$$

6.(a) Use log tables to find the value of: $\frac{(1.23)(0.6975)}{(0.0075)(1278)}$

(b) Simplify: $\frac{1}{x-1} - \frac{1}{x+1} - \frac{2}{x^2+1} - \frac{4}{x^4-1}$

7.(a) If $(x + 2)$ is a factor of $3x^2 - 4kx - 4k^2$ then find the value of (s) of k.

(b) Find H.C.F by division method:

$$x^4 + x^3 - 2x^2 + x - 3, 5x^3 + 3x^2 - 17x + 6$$

8. (a) Solve for x: $\frac{3+5x}{4} - \frac{1}{3} = \frac{2}{3}$

(b) Construct triangle ABC, draw bisectors of its angles:

$$m\overline{AB} = 4.5, m\overline{BC} = 3.1cm, m\overline{CA} = 5.2cm$$

9. Prove that the right bisectors of the sides of a triangle are concurrent.

OR

Prove that "triangles on equal bases and on equal altitudes are equal in area"