(Subjective)

NOTE: Section I is compulsory. Attempt any THREE (3) questions from Section II. However question No. NINE (9) is compulsory.

(Section-I)

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

I   Define symmetric matrix.

II Find the transpose of the matrix $D = \begin{bmatrix} 2 & 3 \\ 0 & 5 \end{bmatrix}$

III Simplify $\sqrt[3]{-125}$

IV Simplify $\left(x^3\right)^2 \div x^{3^2}$

V   Evaluate $\log_2 \dfrac{1}{128}$

VI Write into logarithm sum of difference $\log \dfrac{21 \times 5}{8}$

VII Reduce the rational expression to the lowest form
$$\dfrac{120x^4 y^3 z^5}{30x^3 yz^2}$$

VIII If $x = 2 - \sqrt{3}$ then find $\dfrac{1}{x}$

IX Factorize $4x^2 - 16y^2$

3 Write short answers to any SIX (6) questions. (6×2=12)

I   Find H.C.F. of the given expressions:
$x^2 + 5x + 6$, $x^2 - 4x - 12$

II Solve the equation $\dfrac{x-3}{3} - \dfrac{x-2}{2} = -1$

III Solve the inequality $9 - 7x > 19 - 2x, x \in R$

IV Write the given equation in the form y=mx+c
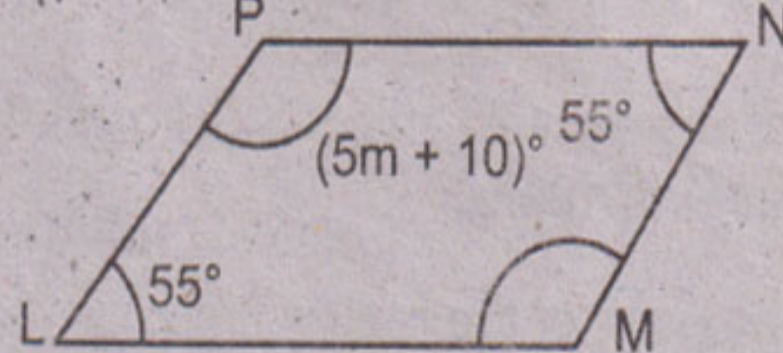$x - 2y = -2$

V   Define collinear points.

VI Find the distance between given points.
$A(-8,1)$ $B(6,1)$

VII Define scalene triangle.

VIII What is meant by S.S.S.≅S.S.S.

IX Find m from the given parallelogram.

4 Write short answers to any SIX (6) questions. (6×2=12)

I   Define right bisector of a line segment.

II Verify that 3cm, 4cm and 5cm are lengths of sides of a triangle.

III Define congruent triangles.

IV Define ratio.

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

VI State the converse of Pythagoras theorem.

VII Define altitude of a triangle.

VIII Construct △ABC, in which
$m\overline{AB} = 3.2cm, m\overline{BC} = 4.2cm, m\overline{CA} = 5.2cm$

IX Define incentre of a triangle.

(Section-II)

Note: Solve any THREE (3) questions. However question No. NINE (9) is compulsory.

5 (a) If $B = \begin{bmatrix} 3 & -1 \\ 2 & -2 \end{bmatrix}$, then prove that BB^{-1}

(b) Simplify $\sqrt{\dfrac{(216)^{2/3} \times (25)^{1/2}}{(.04)^{-1/2}}}$

6 (a) Use log table to find the value of 0.8176×13.64.

(b) If 5x−6y=13 and xy=6 then find the value of $125x^3 - 216y^3$

7 (a) Factorize by factor theorem $x^3 + x^2 - 10x + 8$

(b) Use division method to find the square root
$$\dfrac{x^2}{y^2} - 10\dfrac{x}{y} + 27 - 10\dfrac{y}{x} + \dfrac{y^2}{x^2}$$

8 (a) Solve $\dfrac{5(x-3)}{6} - x = 1 - \dfrac{x}{9}$

(b) Construct the triangle ABC and draw the perpendicular bisectors of the sides
$m\overline{AB} = 5.3cm, m\angle A = 45°, m\angle B = 30°$

9 Prove that any point inside an angle, equidistant from its arms, is on the bisector of it.

OR

Prove that triangles on the same base and of the same (i.e equal) altitudes are equal in area.