(Group – I)

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

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

ii If $\begin{bmatrix} a+3 & 4 \\ 6 & b-1 \end{bmatrix} = \begin{bmatrix} -3 & 4 \\ 6 & 2 \end{bmatrix}$ then find a, b:

iii Simplify: $5^2 \div (5^2)^3$

iv Evaluate: i^{50}

v Find the value of x $\log_{625} 5 = \frac{1}{4}x$

vi Express the given number in scientific notation: 416.9

vii Simplify the given expression: $\frac{(x+y)^2 - 4xy}{(x-y)^2}$

viii Simplify: $\sqrt{21} \times \sqrt{7} \times \sqrt{3}$

ix Factorize: $4x^2 - 16y^2$

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

i Find H.C.F: $102xy^2z, 85x^2yz, 187xyz^2$

ii Solve the equation: $\sqrt{\frac{x+1}{2x+5}} = 2, x \neq -\frac{5}{2}$

iii Solve for x $|2x + 5| = 11$

iv Writing in the form of y = mx + c find the value of m and c:
x-2y=-2

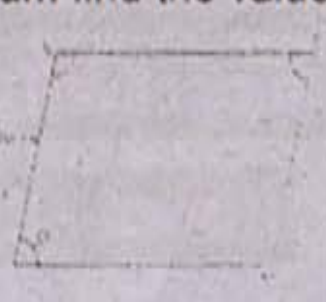
v Verify whether the point (2,3) lies onthe line 2x-y+1 = 0 or not.

vi Find the mid-point of the line segment joining the pair of poins A(0,0) and B(0,-5)

vii Find the distance between the pair of points:A(9,2),B(7,2)

viii If $ABC \cong \Delta LMN$, find the value of x:

ix If LMNP is a parallelogram find the values of m, n:



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

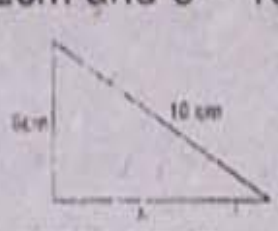
i Define ratio.

ii In equilateral triangle ABC, $\overline{AD}$ is bisector of angle A, then find the value of x^o, y^o and z^o:

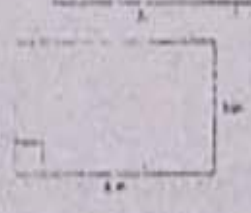
iii What will be the angle for shortest distance from an outside point to the line?

iv Verify that the triangle having the following measures of the sides is right angled a = 5cm, b - 12cm and c = 13cm.

v Find the value of x in the figure:



vi Find the area of figure.



vii Define area of the figure.

viii Construct ΔABC in which: $m\overline{AB} = 2.5cm, m\angle 30^\circ, m\angle B = 105^\circ$

ix Define circumcentre.

PART – II

Note: Attempt any Two questions.

5. (a) Solve the system of linear equations by Cramer's rule: (4)

$$2x - 2y = 4$$
$$3x + 2y = 6$$

(b) Simplify: $\left(\frac{a^p}{a^q}\right)^{p+q} \cdot \left(\frac{a^q}{a^r}\right)^{q+r} \div 5(a^p.a^r)^{p+r}, a \neq 0$ (4)

6. (a) Use log table to find the value of: $\sqrt[3]{25.47}$ (4)

(b) If x+y+z=12 and $x^2+y^2+z^2$ =64 then find the value of xy+yz+zx (4)

7. (a) Factorize: $x^2 - y^2 - 4xz + 4z^2$ (4)

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

$$x^3 + 3x^2 - 16x + 12, \quad x^3 + x^2 - 10x + 8$$ (4)

8. (a) Solve the equation: $\frac{5(x-3)}{6} - x = 1 - \frac{x}{9}$ (4)

(b) Construct the triangle ABC and drawthe perpendicular bisector of its sides. (4)

$$m\overline{BC} = 2.9cm, m\angle A = 30^\circ, m\angle B = 60^\circ$$

9. (a) Prove that any point on the right bisector of a line segment is equidistant from its end points. (4)

(b) Prove that any point on the bisector of an angle is equidistant from (4)