| Mathematics (Science) | Ninth, 2024 Lahore Board | Group – II |
|---|---|---|
| Time: 2.10 hrs. | Essay Type | Marks : 60 |



## PART – I

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

i. If $A = \begin{bmatrix} -4 & 2 \\ 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} -3 \\ -2 \end{bmatrix}$, find AB.

ii. Simplify: $x^{5^2} \div (x^5)^2$.

iii. Find the value of x and y if $x + iy + 1 = 4 - 3i$

iv. Find the value of x : $\log_{64} 8 = \frac{x}{2}$

v. Find the value of x if: $\log x = 0.1821$

vi. Simplify: $\left(\sqrt{2} + \frac{1}{\sqrt{3}}\right)\left(\sqrt{2} - \frac{1}{\sqrt{3}}\right)$

vii. If $x = \sqrt{3} + 2$, find $x + \frac{1}{x}$

viii. Factorize: $4x^2 + 12x + 5$

ix. Factorize: $1 - 27y^3$

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

i. Find the L.C.M. of the expressions by factorization $x^2 - 25x + 100$ and $x^2 - x - 20$

ii. Solve the inequality: $4 - \frac{1}{2}x \geq -7 + \frac{1}{4}x$

iii. Solve the equation: $\frac{x-3}{2} - \frac{x-2}{2} = -1$

iv. Find the values of m and c of the line by expressing in the form $y = mx + c$ ; $2x - 3y = -5$

v. Draw the graph of $x = -3$

vi. Find the distance between the points : A ( 6, -2), B (6, -3)

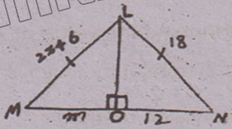
vii. Find the mid-point of the line segment joining each pair of points : A (2, - 6), B (3, - 6)

viii. Define congruent triangles.

ix. Define parallelogram.

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

i. In the given congruent triangles LMO and LNO. Find the unknown value of 'x' and 'm'.



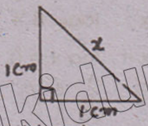

ii. If 3cm and 4cm are lengths of two sides of a right angled triangle, then what should be the third length of the triangle?

iii. Define similar triangles.

iv. Verify that the measures of sides are right angle or not :

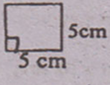
a = 1.5 cm, b = 2 cm, c = 2.5 cm

v. Find the unknown value of 'x' in the figure:




vi. Define interior of a triangle.

vii. Find the area of figure :




viii. Define centroid.

ix. Construct $\Delta ABC$ in which : m $\overline{AB}$ = 3cm , m $\overline{AC}$ = 3.2cm , m $\angle A = 45°$

## PART - II

**Note:** Attempt THREE questions in all.
But question No.9 is Compulsory.

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

$6x - 2y = 8$
$5x + y = -4$

**(b)** Show that : 4

$$\left(\frac{x^a}{y^b}\right)^{a+b} \times \left(\frac{x^b}{y^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c-a} = 1$$

**Q.6(a)** Use log table to find the value of:

$$\frac{(438)^3 \sqrt{0.056}}{(388)^4}$$

**(b)** If $x + \frac{1}{x} = 3$, then find the value of $x^3 + \frac{1}{x^3}$

**Q.7(a)** Factorize the polynomial by factor theorem :

$x^3 - 2x^2 - x + 2$

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

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

**Q.8(a)** Solve: $-5 \leq \frac{4 - 3x}{2} < 1$ 4

**(b)** Construct $\Delta ABC$ and draw perpendicular bisectors of the sides of triangle :

m $\overline{AB}$ = 4cm , m $\overline{BC}$ = 4.8cm , m $\overline{AC}$ = 3.6cm

**Q.9** Prove that the bisectors of the angles of a triangle are concurrent. 10

OR

Prove that triangles on equal bases and of equal altitudes are equal in area.