Time: 2 Hours 40 Minutes. KT-IX 23-I

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**Mathematics Science (9th)**
Fresh/Reappear

**Section "B"** **Marks: 36**

**Q.2** Attempt any **NINE** parts of the following. All parts carry equal marks.

i. If $C = \begin{bmatrix} 1 & -6 \\ -3 & 5 \end{bmatrix}$, $D = \begin{bmatrix} 2 & -6 \\ 1 & -7 \end{bmatrix}$ **determine** whether CD = DC, or not?.

ii. Simplify : $(-4p^2q)^5$ ii. $(-x^3y^2)^3$

iii. Find the volume of "p" : $\log_{\sqrt{7}} 6 + \log_{\sqrt{7}} 8 - \log_{\sqrt{7}} 4 = \log_{\sqrt{7}} p$

iv. Evaluate the following when b = –2:
$3b^3 - 4b^2 - 3$

v. Find the value of '$pq$' if $p + q = 9, p - q = 7$

vi. Without performing division , find the remainder when $2w^2 - 5w + 3$ is divided by $w - 3$

vii. Simplify: $\frac{c+d}{3c+2d} + \frac{c-d}{3c+2d}$

viii. Solve: $8 + 3\sqrt{c} = 20$

ix. Solve and plot on number line:
$z - \frac{5}{7} \leq \frac{15+2z}{7}$

x. Prove that the points p(3,1), Q(6,4) and R(9,7) are collinear.

xi. Prove that if two angles of a triangle are congruent, then the sides opposite to those angles are congruent.

xii. Prove that any point on the right bisector of a line segment is equidistant from end points of the segment.

**Section "C"** **Marks: 24**

**Note:** Attempt any **FOUR** questions of the following. All questions carry equal marks.

**Q.3** Prove that if two opposite sides of a quadrilateral are congruent, then it is a parallelogram.

**Q.4** Prove that from a point outside a line, the perpendicular is the shortest distance from the point to the line.

**Q.5** Prove that if a line segment intersects the two sides of a triangle in the same ratio then it is parallel to the third side.

**Q.6** Prove that in a right-angled triangle, the square of the length of hypotenuse is equal to the sum of the squares of the lengths of the other two sides.

**Q.7** Prove that parallelograms on equal bases and having the same altitude are equal in area.

**Q.8** Construct ΔLMN, for $m\overline{LM} = 5.4\text{cm}$, $m\angle L = 75°$ and $m\angle M = 45°$