Mathematics	9th, Gujranwala Board, 2015	Group – I
Time: 2.45 hours	Subjective	Marks = 63

Note: Section I is compulsory. Attempt any three questions from Section II and question no. 9 is compulsory.

Section-I

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

i Define rectangular matrix with an example.

ii If

$$B = \begin{bmatrix} 0 & 7 \\ -3 & 8 \end{bmatrix}, \text{ then find } -3B^t.$$

iii Define terminating decimal fraction with an example.

iv Solve the equation $(3+4i)^2 - 2(x - yi) = x + yi$ for real x and y.

v If log 2 = 0.3010, then find log 32.

vi Find the value of x if log x = 0.1821.

vii Evaluate

$$\frac{x^2y^3-5z^4}{xyz} \text{ for } x = 4, y = -2 \text{ and } z = -1.$$

viii Factorize $x^3 - y^3 - x + y$.

ix Factorize $1 + 2ab - a^2 - b^2$.

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

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

ii Solve the equation

$$\sqrt[3]{3x+5} = \sqrt[3]{x-1}$$

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

iv Define collinear points.

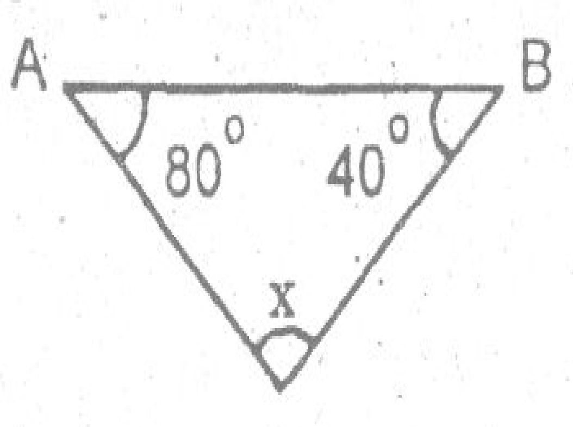
v Find the value of m and c of the line $2x - y = 7$ expressing it in the form of $y = mx + c$.

vi Find the distance between the points.

A (-8, 1), B (6, 1)

vii Find the mid-point of the line segment joining pair of points. A(-8, 1), B(6, 1)

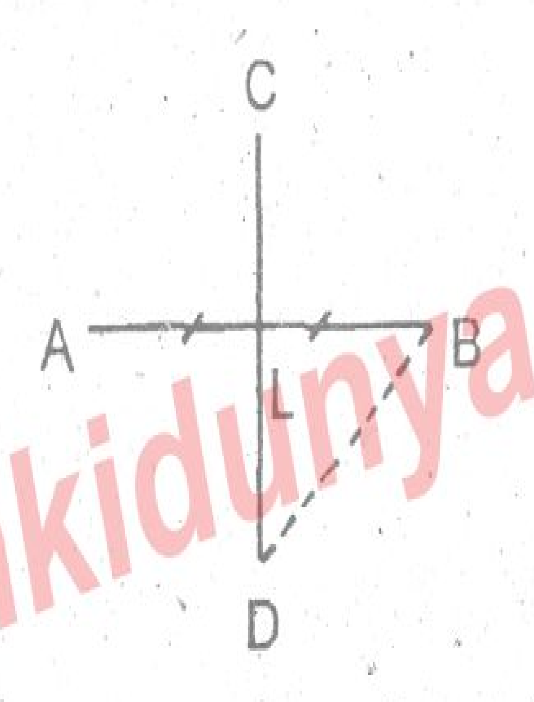
viii In triangle ABC, find value of x.



ix Define square.

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

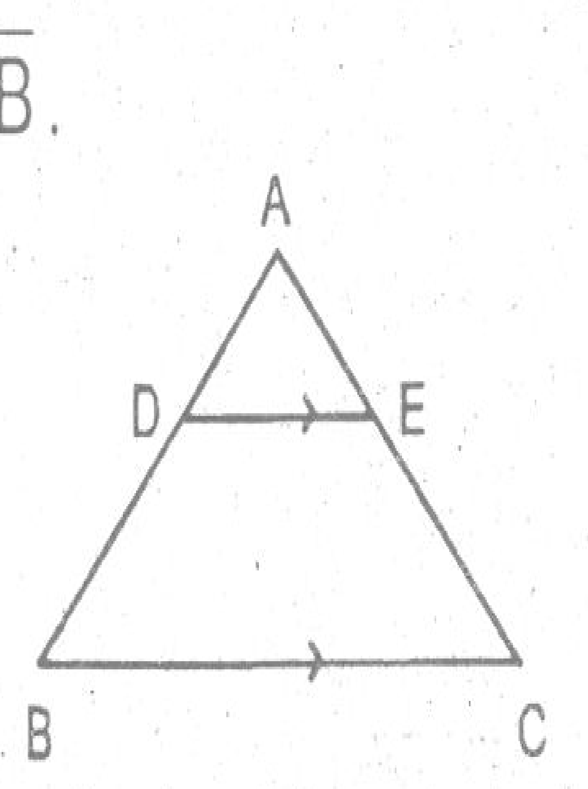
i In figure, $\overline{CD}$ is right bisector of the line segment $\overline{AB}$. If $m\overline{AB} = 6$ cm, then find $m\overline{AL}$ and $m\overline{LB}$.



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

iii Define congruent triangles.

iv In the given triangle ABC, $\overline{DE} \parallel \overline{BC}$. If $m\overline{AD} = 2.4$cm, $m\overline{AE} = 3.2$cm, $m\overline{EC} = 4.8$cm; find $\overline{AB}$.



v Verify that triangle having following measures of sides is right angled. a = 9cm; b=12cm; c=15cm

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

vii Define area of a figure.

viii Construct a triangle ABC in which $m\overline{AB} = 3.6$cm, $m\angle A = 75°$, $m\angle B = 45°$

ix Define circum-centre.

Section-II

(Each question = 8 marks, and each part = 4 marks)

5. (a) Solve the following system of linear equations using Cramer's rule.

$3x - 2y = 1, \quad -2x + 3y = 2$

(b) Simplify

$$\left(\frac{a^{2l}}{a^{l+m}}\right)\left(\frac{a^{2m}}{a^{m+n}}\right)\left(\frac{a^{2n}}{a^{n+l}}\right)$$

6. (a) Find value of

$$\frac{(438)^3\sqrt{0.056}}{(388)^4} \text{ by using logarithm.}$$

(b) If $3x + 4y = 11$ and $xy = 12$, then find the value of $27x^3 + 64y^3$

7. (a) The expression $ax^3 - 9x^2 + bx + 3a$ is exactly divisible by $x^2 - 5x + 6$. Find the values of a and b.

(b) For what value of k is (x + 4) the H.C.F of $x^2 + x - (2k + 2)$ and $2x^2 + kx - 12$?

8. (a) Solve the equation and check

$$\sqrt{x-3} - 7 = 0$$

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

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

OR

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