MM 30 **Triangles** **Time 1h**

Section A 1 mark each

Q1. If in two triangles ABC and PQR, $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$, then

(A) ΔPQR ~ ΔCAB (B) ΔPQR ~ ΔABC (C) ΔCBA ~ ΔPQR (D) ΔBCA ~ ΔPQR

Q2. In ΔABC, DE ∥ BC intersecting AB at D and AC at E, AD = 1cm, DB = 3cm, AE = 1.5cm, AC =?

(A) 6 cm (B) 10 cm (C) 8 cm (D) None of these

Q3. In ΔABC, D is a point on AB and E is a point on AC, DE is joined. AD = 2, DB = 3, AE = 3 cm, EC = 4.5. Is DE ∥ BC?

Q4. The lengths of the diagonals of a rhombus are 16 cm and 12 cm. Then, the length of the side of the rhombus is

(A) 9 cm (B) 10 cm (C) 8 cm (D) 20 cm

Q5. In triangles ABC and DEF, ∠B = ∠E, ∠F = ∠C and AB = 3 DE. Then, the two triangles are

(A) congruent but not similar (B) similar but not congruent
(C) neither congruent nor similar (D) congruent as well as similar

Section B 2 marks each

Q6. D is a point on side QR of ΔPQR such that PD ⊥ QR. Will it be correct to say that ΔPQD ~ ΔRPD? Why?

Q7. In the ΔABC, ∠ACB = 90° and CD ⊥ AB, D lies on AB. Prove that $CD^2 = BD \times AD$

Q8. In a triangle PQR, N is a point on PR such that Q N ⊥ PR . If PN. NR = QN^2, prove that ∠PQR = 90°

Section C 3 marks each

Q9. O is any point inside a rectangle ABCD. Prove that $OB^2 + OD^2 = OA^2 + OC^2$.

Q10. In ΔPQR, PD ⊥ QR such that D lies on QR . If PQ = *a*, PR = *b*, QD = *c* and DR = *d*, prove that $(a + b)(a - b) = (c + d)(c - d)$.

Section D 4 marks each

Q11. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides. Apply the above theorem on the following: ABC is a triangle and PQ is a straight line meeting AB in P and AC in Q. If AP = 1 cm, PB = 4cm, AQ = 1.5 cm, QC = 6 cm, Prove that the area of Δ APQ is one-sixteenth of the area of ΔABC.

Q12. In Fig. 6.21, PA, QB, RC and SD are all perpendiculars to a line *l*, AB = 6 cm, BC = 9 cm, CD = 12 cm and SP = 36 cm. Find PQ, QR and RS.