MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 87

Total Marks : 31

Max. Time : 32 min.

Topic : Parabola

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.1,2,3	(3 marks, 3 min.)	[9, 9]
Multiple choice objective (no negative marking) Q.4,5	(5 marks, 4 min.)	[10, 8]
Subjective Questions (no negative marking) Q.6,7,8	(4 marks, 5 min.)	[12, 15]

1. The parabola having its focus at (3, 2) and directrix along the y – axis has its vertex at–

(A) (2, 2) (B) $\left(\frac{3}{2}, 2\right)$ (C) $\left(\frac{1}{2}, 2\right)$ (D) $\left(\frac{2}{3}, 2\right)$

2. Through the vertex 'O' of the parabola $y^2 = 4ax$, variable chords OP and OQ are drawn at right angles. If the variable chord PQ intersects the axis of x at R, then distance OR:

(A) varies with different positions of P and Q

(B) equals the semi latus rectum of the parabola

(C) equals latus rectum of the parabola

(D) equals double the latus rectum of the parabola

3. Area of the triangle formed by the tangents at the points (4, 6), (10, 8) and (2, 4) on the parabola $y^2 - 2x = 8y - 20$, is (in sq. units)

(A) 4 (B) 2 (C) 1 (D) 8

4. The equation of tangents drawn to the parabola $y^2 + 12x = 0$ from the point (3, 8) is/are

(A) $3x - y - 1 = 0$ (B) $x - 2y + 13 = 0$ (C) $x + 3y - 27 = 0$ (D) none of these

5. The equation $y^2 + 3 = 2(2x + y)$ represents a parabola with the vertex at :

(A) $\left(\frac{1}{2}, 1\right)$ & axis parallel to x – axis (B) $\left(1, \frac{1}{2}\right)$ & axis parallel to x – axis

(C) $\left(\frac{1}{2}, 1\right)$ & focus at $\left(\frac{3}{2}, 1\right)$ (D) $\left(\frac{1}{2}, 1\right)$ & axis parallel to y – axis

6. The focal distance of a point on a parabola $y^2 = 8x$ is 8. Find it

7. Two tangents to the parabola $y^2 = 8x$ meet the tangent at its vertex in the points P and Q. If PQ = 4 units, find the locus of the point of intersection of the two tangents.

8. Find the equations of common tangents to the parabola $y^2 = 16x$ and the circle $x^2 + y^2 = 8$.

Answers Key

1. (B) **2.** (C) **3.** (B) **4.** (A)(C)

5. (A)(C) **6.** $(6, 4\sqrt{3})$, $(6, -4\sqrt{3})$ **7.** $y^2 = 8(x + 2)]$

8. $x \pm y + 4 = 0$