**MATHEMATICS**

**DPP**

DAILY PRACTICE PROBLEMS

# DPP No. 52

**Total Marks : 27**

**Max. Time : 28 min.**

**Topics : Circle, Straight Lines**

| Type of Questions | | M.M., Min. |
|---|---|---|
| Single choice Objective (no negative marking) Q.1,2,3,4 | (3 marks, 3 min.) | [12, 12] |
| Assertion and Reason (no negative marking) Q.5 | (3 marks, 3 min.) | [3, 3] |
| Subjective Questions (no negative marking) Q.6 | (4 marks, 5 min.) | [4, 5] |
| Match the Following (no negative marking) Q.7 | (8 marks, 8 min.) | [8, 8] |

**1.** The equation of the image of the circle $x^2 + y^2 + 16x - 24y + 183 = 0$ in the line mirror $4x + 7y + 13 = 0$ is:

(A) $x^2 + y^2 + 32x - 4y + 235 = 0$ (B) $x^2 + y^2 + 32x + 4y - 235 = 0$

(C) $x^2 + y^2 + 32x - 4y - 235 = 0$ (D) $x^2 + y^2 + 32x + 4y + 235 = 0$

**2.** Find the maximum and minimum distance of the point $(2, -7)$ from the circle $x^2 + y^2 - 14x - 10y - 151 = 0$.

(A) {28, 2} (B) {2, 28} (C) {2, 13} (D) {15, 13}

**3.** The line $2x + 3y = 12$ meets the x - axis at A and the y - axis at B. The line through (5, 5) perpendicular to AB meets the x - axis, y - axis & the line AB at C, D, E respectively. If O is the origin, then the area of the region OCEB is :

(A) $\frac{20}{3}$ sq. units (B) $\frac{23}{3}$ sq. units (C) $\frac{26}{3}$ sq. units (D) $\frac{5\sqrt{52}}{9}$ sq. units

**4.** The algebraic sum of perpendicular distances from A $(x_1, y_1)$, B $(x_2, y_2)$ and C $(x_3, y_3)$ to a variable line is zero, then all the such lines will always pass through

(A) the orthocentre of $\Delta ABC$ (B) the centroid of $\Delta ABC$

(C) the circumcentre of $\Delta ABC$ (D) the incentre of $\Delta ABC$

**5.** **Statement-1 :** Perpendicular from origin O to the line joining the points A $(c\cos\alpha, c\sin\alpha)$ and B $(c\cos\beta, c\sin\beta)$ divides it in the ratio 1 : 1

**Statement-2 :** Perpendicular from opposite vertex to the base of an isosceles triangle bisects it.

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1

(C) Statement-1 is True, Statement-2 is False

(D) Statement-1 is False, Statement-2 is True

**6.** The sides of a rhombus are parallel to $y = 2x + 3$ and $2y = x + 5$. The diagonals of the rhombus intersect at (1, 2). If one vertex of the rhombus lies on the y-axis and possible values of the ordinates of this vertex are a & b, then find the value of (a + b).

**7.** **Match the column**

Match reflection of line $x + y + 1 = 0$, respect to the line given in the column-I, with lines in column-II.

| **Column - I** | | **Column - II** | |
|---|---|---|---|
| (A) | $2x + y + 1 = 0$ | (p) | $x + 7y - 11 = 0$ |
| (B) | $x - 2y + 1 = 0$ | (q) | $7x + y + 1 = 0$ |
| (C) | $x + 2y - 1 = 0$ | (r) | $7x + y - 11 = 0$ |
| (D) | $2x + y - 1 = 0$ | (s) | $7x + y + 7 = 0$ |

# Answers Key

**1.** (D)

**2.** (A)

**3.** (B)

**4.** (B)

**5.** (A)

**6.** 4

**7.** (A) $\rightarrow$ q, (B) $\rightarrow$ (s), (C) $\rightarrow$ p, (D) $\rightarrow$ r