MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 54

Total Marks : 32

Max. Time : 32 min.

Topics : Circle, Straight Lines, Pair of Straight Lines

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

1. A variable line cuts the lines $x^2 - (a + b)x + ab = 0$ in such a way that intercept between the lines subtends a right angle at origin. The locus of the foot of the perpendicular from origin on the variable line is:

(A) $x^2 + y^2 - (a + b)x + ab = 0$ (B) $x^2 + y^2 + (a + b)x - ab = 0$

(C) $x^2 + y^2 + (a + b)x + ab = 0$ (D) $x^2 + y^2 - (a + b)x - ab = 0$

2. If the equation $2x^2 + 3xy + by^2 - 11x + 13y + c = 0$ represents two perpendicular straight lines, then

(A) $b = -2$ (B) $b = 2$ (C) $c = 2$ (D) $c = -2$

3. Point(s) on the line $x = 3$ from which the tangents drawn to the circle $x^2 + y^2 = 8$ are at right angles is/are

(A) $(3, -\sqrt{7})$ (B) $(3, \sqrt{23})$ (C) $(3, \sqrt{7})$ (D) $(3, -\sqrt{23})$

4. The possible radius of a circle whose centre is at origin and which touches the circle $x^2 + y^2 - 6x - 8y + 21 = 0$, is

(A) 2 (B) 3 (C) 5 (D) 7

5. The centre of a square is at the origin and one vertex is A(2, 1). Find the co-ordinates of other vertices of the square.

6. Plot the straight lines on the co-ordinate axes.

(i) $y = x$ (ii) $y = -x$ (iii) $y = x + 1$

7.

Column - I		**Column-II**	
(A)	If the distance between the lines $(x + 7y)^2 + \sqrt{2}(x + 7y) - 42 = 0$ is r, then $(5r^2 - 10)$ equals to	(p)	1
(B)	If the sum of the distance of a point from two perpendicular lines in a plane is 1, then its locus is $\|x\| + \|y\| = k$, where k is equal to	(q)	3
(C)	If $6x + 6y + m = 0$ is acute angle bisector of lines $x + 2y + 4 = 0$ & $4x + 2y - 1 = 0$, then m is equal to	(r)	2
(D)	Area of the triangle formed by the lines $y^2 - 9xy + 18x^2 = 0$ and $y = 6$ is	(s)	7

Answers Key

1. A

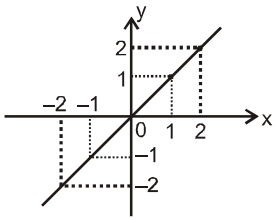
2. A

3. AC

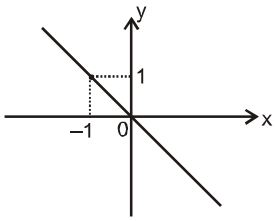
4.BD

5. (–2, –1), (–1, 2), (1, –2)

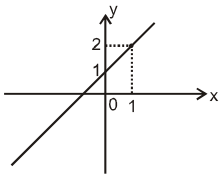
6. (i)



(ii)



(iii)



7. (A) → (s), (B) → (p), (C) → (s), (D) → (q)