MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 53

Total Marks : 27

Max. Time : 28 min.

Topic : Straight Lines

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.1,2,3	(3 marks, 3 min.)	[6, 6]
Multiple choice objective (no negative marking) Q.4	(5 marks, 4 min.)	[5, 4]
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 is a point on either of two rays $y + \sqrt{3}\,|x| = 2$ at a distance of $\frac{4}{\sqrt{3}}$ units from their point of intersection. The co–ordinates of the foot of perpendicular from A on the bisector of the angle between them are

(A) $\left(-\frac{2}{\sqrt{3}}, 2\right)$ (B) (0, 0) (C) $\left(\frac{2}{\sqrt{3}}, 2\right)$ (D) (0, 4)

2. The base BC of a Δ ABC is bisected at the point (p, q) & the equation to the side AB & AC are $px + qy = 1$ & $qx + py = 1$. The equation of the median through A is :

(A) $(p - 2q)x + (q - 2p)y + 1 = 0$

(B) $(p + q)(x + y) - 2 = 0$

(C) $(2pq - 1)(px + qy - 1) = (p^2 + q^2 - 1)(qx + py - 1)$

(D) none of these

3. If the line $y = x$ cuts the curve $x^3 + 3y^3 - 30xy + 72x - 55 = 0$ in points A, B and C, then the value of $\frac{4\sqrt{2}}{55}$ OA.OB.OC (where O is the origin), is

(A) 55 (B) $\frac{1}{4\sqrt{2}}$ (C) 2 (D) 4

4. The equation of lines passing through point of intersection of lines $3x - y - 20 = 0$ and $x - 2y - 5 = 0$, which are at a distance of 5 units from origin, is/are :

(A) $4x + 3y = 25$ (B) $3x - 4y = 25$ (C) $4x - 3y = 25$ (D) $3x + 4y = 25$

5. A circle with centre in the first quadrant is tangent to $y = x + 10$, $y = x - 6$, and the y-axis. Let (h, k) be the centre of the circle. If the value of $(h + k) = a + b\sqrt{a}$ where $(a, b \in Q)$, find the value of $a + b$.

6. If the variable line $3x - 4y + k = 0$ lies between the circles $x^2 + y^2 - 2x - 2y + 1 = 0$ and $x^2 + y^2 - 16x - 2y + 61 = 0$ without intersecting or touching either circle, then the range of k is (a, b) where $a, b \in I$. Find the value of $(b - a)$

7. **Match the column**

	Column – I	**Column – II**
(A)	Minimum possible number of positive roots of $x^2 - (1 + b)x + b - 2 = 0$ is $(b \in R)$	(p) 2
(B)	In a Δ ABC, co-ordinates of orthocentre, centroid and vertex A are (3, 2), (3, 1) and (1, 2) respectively. Then x-coordinate of vertex B is	(q) 0
(C)	If $\log_x \log_3 \log_x(2x^2) = 0$, then x =	(r) 1
(D)	If there are three non concurrent and non parallel lines, then number of points which are equidistant from all the three lines are	(s) 4

Answers Key

1. (B)

2. (C)

3. (D)

4. (C)(D)

5. 10

6. 6

7. (A)→(r), (B)→(s), (C)→(p), (D)→(s)