Straight Lines and Pair of Straight Lines

EE24BTECH11041 - Mohit

I. A -FILL IN THE BLANKS

1) The area enclosed within the curve $|x| + |y| = 1$ is ... (1981-2 Marks)
2) $y = 10^x$ is the reflection of $y = \log x$ in the line whose equation is ... (1982-2 Marks)
3) The set of lines $ax + by + c = 0$,where $3a + 2b + 4c = 0$ concurrent at the point ... (1982-2 Marks)
4) Given the points $A(0, 4)$ and $B(0, -4)$,the equation of the locus of the point $p(x, y)$,such that $|AP - BP| = 6$ is ... (1983-1 Marks)
5) If a, b and c are in A.P, then the straight line $ax + by + c = 0$ will always pass through a fixed point whose coordinate are ... (1984-2 Marks)
6) The orthocentre of the triangle formed by the lines $x + y = 1, 2x + 3y = 6$ and $4x - y + 4 = 0$ lies in the quadrant number ... (1985-2 Marks)
7) Let the algebric sum of the perpendicular distances from the points $(2, 0), (0, 2)$ and $(1, 1)$ to a variable straight line be zero;then the line passes through a fixed point whose coordinates are ... (1991-2 Marks)
8) the vertices of a triangle are $A(-1, -7), B(5, 1)$ and $C(1, 10)$. The equation of the bisector of the angle $\angle ABC$ is ... (1993-2 marks)

II. B-TRUE/FALSE

1) The straight line $5x + 4y = 0$ passes through the point of intersection of the straight lines $x + 2y - 10 = 0$ and $2x + y + 5 = 0$. (1983-1 Marks)
2) The lines $2x + 3y + 19 = 0$ and $9x + 6y - 17 = 0$ cut the coordinates axes in concylic points. (1988-1 Marks)

III. C-MCQS WITH ONE CORRECT ANSWER

1) The points $(-a, -b)$,$(0, 0)$,(a, b) and (a^2, ab) are: (1979)
   a) collinear
   b) Vertices of a parallelogram
   c) Vertices of a rectangle
   d) None of these

2) The points of the $(4, 1)$ undergoes the following three transformations successively. (1980)
   a) Reflection about the line $y = x$.
   b) Translation through a distances of x-axis.
   c) Rotation through an $\frac{\pi}{4}$ about the origin in the counter clockwise direction.

   Then the final position of the point is given by the coordinates.

   a) $\left(\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$ c) $\left(-\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$
   b) $(-\sqrt{2}, 7\sqrt{2})$ d) $(\sqrt{2}, 7\sqrt{2})$

3) The straight lines $x + y = 0, 3x + y - 4 = 0, x + 3y - 4 = 0$ from a triangle which is (1983-1 Marks)

   a) isosceles   c) right angled
   b) equilateral   d) none of these

4) If $p = (1, 0), Q = (-1, 0)$ and $R = (2, 0)$ are three given points,then locus of the points S satisfying the relation
   $SQ^2 + SR^2 = 2SP^2$ is (1988-2 Marks)
   a) a straight lines parallel to x-axis
   b) a circle passing through the origin
   c) a circle with the centre at the origin
   d) a straight line parallel to y-axis

5) Line L has intercepts a and b on the coordinate axes.When the axes are rotated through a given angle,keeping the origin fixed,the same line L has intercept p and q,then (1990-2 Marks)

   a) $a^2 + b^2 = p^2 + q^2$ c) $a^2 + p^2 = b^2 + q^2$
   b) $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{p^2} + \frac{1}{q^2}$ d) $\frac{1}{a^2} + \frac{1}{p^2} = \frac{1}{b^2} + \frac{1}{q^2}$