Paper – 4 (Pair of Straight Line)

1. Two lines represented by equation $x^2 + xy + y^2 = 0$ are
   (a) Coincident
   (b) Parallel
   (c) Mutually perpendicular
   (d) Imaginary

2. The equation of pair of straight lines perpendicular to the pair $ax^2 + 2hxy + by^2 = 0$ is
   (a) $ax^2 - 2hxy + by^2 = 0$
   (b) $bx^2 + 2hxy + ay^2 = 0$
   (c $ay^2 - 2hxy + bx^2 = 0$
   (d) $ay^2 - bx^2 = 0$

3. The values of h for which the equation $3x^2 + 2hxy - 3y^2 - 40x + 30y - 75 = 0$ represents a pair of straight lines, are
   (a) 4, 4
   (b) 4, 6
   (c) 4, − 4
   (d) 0, 4

4. The equation $(x - 5)^2 + (x - 5)(y - 6) - 2(y - 6)^2 = 0$ represents
   (a) A circle
   (b) Two straight lines passing through origin
   (c) Two straight lines passing through the point $(5, 6)$
   (d) None of these

5. A second degree homogenous equation in x and y always represents
   (a) A pair of straight lines
   (b) A circle
   (c) A conic section
   (d) None of these

6. If $6x^2 + 11xy - 10y^2 + x + 31y + k = 0$ represents a pair of straight lines, then $k =$
   (a) − 15
   (b) 6
   (c) − 10
   (d) − 4

7. If $4ab = 3h^2$, then the ratio of slopes of the lines represented by the equation $ax^2 + 2hxy + by^2 = 0$ will be
   (a) $\sqrt{2} : 1$
   (b) $\sqrt{3} : 1$
   (c) $2 : 1$
   (d) $1 : 3$

8. If the equation $ax^2 + 2hxy + by^2 = 0$ represents two lines $y = m_1 x$ and $y = m_2 x$, then
   (a) $m_1 + m_2 = \dfrac{-2h}{b}$ and $m_1 m_2 = \dfrac{a}{b}$
   (b) $m_1 + m_2 = \dfrac{2h}{b}$ and $m_1 m_2 = \dfrac{-a}{b}$
   (c) $m_1 + m_2 = \dfrac{2h}{b}$ and $m_1 m_2 = \dfrac{a}{b}$
   (d) $m_1 + m_2 = \dfrac{2h}{b}$ and $m_1 m_2 = -ab$

9. The nature of straight lines represented by the equation $4x^2 + 12xy + 9y^2 = 0$ is
   (a) Real and coincident
   (b) Real and different
   (c) Imaginary and different
   (d) None of the above

10. The equation of the perpendiculars drawn from the origin to the lines represented by the equation $2x^2 - 10xy + 12y^2 + 5x - 16y - 3 = 0$ is
    (a) $6x^2 + 5xy + y^2 = 0$
    (b) $6y^2 + 5xy + x^2 = 0$
    (c) $6x^2 - 5xy + y^2 = 0$
    (d) None of these

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Answer Key will be available in next paper.

Answer Key Paper 3 (Straight Line)

01.B	02.A	03.D	04.C	05.B
06.D	07.C	08.D	09.C	10.A

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