1. The nearest point on the line $3x - 4y = 25$ from the origin is
(a) $(-4, 5)$ (b*) $(3, -4)$ (c) $(3, 4)$ (d) $(3, 5)$

2. The image of the point $(-1, 3)$ by the line $x - y = 0$ is
(a*) $(3, -1)$ (b) $(1, -3)$ (c) $(-1, -1)$ (d) $(3, 3)$

3. The straight line passing through the point of intersection of the straight lines $x - 3y + 1 = 0$ and $2x + 5y - 9 = 0$ and having infinite slope has the equation
(a*) $x = 2$ (b) $3x + y - 1 = 0$ (c) $y = 1$ (d) none of these

4. If a, b, c be in A.P. then $ax + by + c = 0$ represents
(a) a single line (b*) a family of concurrent lines
(c) a family of parallel lines (d) none of these

5. The line $(p + 2q)x + (p - 3q)y = p - q$ for different values of p and q passes through the point
(a) $\left(\frac{3}{2}, \frac{5}{2}\right)$ (b) $\left(\frac{2}{5}, \frac{2}{5}\right)$ (c) $\left(\frac{3}{5}, \frac{3}{5}\right)$ (d*) $\left(\frac{2}{5}, \frac{3}{5}\right)$

6. Let the algebraic sum of the perpendicular distance 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 co–ordinates are
(a*) (1, 1) (b) (1, – 1) (c) (– 1, – 1) (d) (0, 1)

7. The lines $2x - 3y = 1$, $3x - 4y = 1$ and $6x + 4y = 1$ represent three straight lines which
(a) are concurrent (b) are parallel
(c*) enclose a right angled triangular region (d) enclose an obtuse angled triangular region

8. The straight lines $x + y = 0$, $3x + y = 4$, $x + 3y - 4 = 0$ form a triangle which is
(a*) isosceles (b) equilateral (c) right angled (d) none of these

9. The straight line passing through the point of intersection of the straight lines $x - 3y + 1 = 0$, $2x + 5y - 9 = 0$ and having finite slope and at distance 2 units from the origin has the equation
(a*) $x = 2$ (b) $3x + 4y - 10 = 0$ (c) $y = 1$ (d) none of these

10. The line $3x + 4y - 24 = 0$ cuts the x–axis at A and y–axis at B. Then the in–centre of the triangle OAB where O is the origin is
(a) (1, 2) (b*) (2, 2) (c) (12, 12) (d) (2, 12)

11. If $\frac{x}{c} + \frac{y}{d} = 1$ be any line through the intersection of line $\frac{x}{a} + \frac{y}{b} = 1$, then
(a) $\frac{1}{a} + \frac{1}{d} = \frac{1}{b} + \frac{1}{c}$ (b) $\frac{1}{b} + \frac{1}{d} = \frac{1}{c} + \frac{1}{a}$ (c) $\frac{1}{c} + \frac{1}{d} = \frac{1}{a} + \frac{1}{b}$ (d*) none of these

12. If the lines $3y + 4x = 1$, $y = x + 5$ and $5y + bx = 3$ are concurrent then the value of b is
(a*) 1 (b) 3 (c) 6 (d) 0

13. Let the vertices of a triangle be (0, 0), (3, 0) and (0, 4). Its orthocentre is
(a*) (0, 0) (b) $\left(1, \frac{4}{3}\right)$ (c) $\left(\frac{3}{2}, 2\right)$ (d) none of these

14. PQRS is a rectangle whose sides are parallel to fixed directions. P lies on the x–axis while Q and S lie on the lines $x = a$ and $x = -a$ respectively. Then the locus of R is a
(a) circle (b*) straight line
(c) pair of straight lines (d) none of these

15. Three lines $px + qy + r = 0$, $qx + ry + p = 0$ and $rx + py + q = 0$ are concurrent if
(a*) $p + q + r = 0$ (b*) $p^2 + q^2 + r^2 = pq + qr + rp$
(c*) $p^3 + q^3 + r^3 = 3pqr$ (d) none of these

16. Given four lines whose equations are $x + 2y – 3 = 0$, $2x + 3y – 4 = 0$, $3x + 4y – 7 = 0$ and $4x + 5y – 6 = 0$ then
(a) they are all concurrent
(b) they are sides of a quadrilateral
(c*) none of these

17. All points lying inside the triangle formed by the points (1, 3), (5, 0) and (– 1, 2) satisfy
(a*) $3x + 2y \geq 0$ (b) $2x + y – 13 > 0$
(c*) $2x – 3y – 12 \leq 0$ (d) $– 2x + y \geq 0$ (e) none of these

18. The length of the perpendicular drawn from the point (1, 2) upon the straight line $3x – 4y + 15 = 0$ is
(a) 3 (b*) 2 (c) 4 (d) 1

19. The line L has intercepts a and b on the co–ordinates axes. When keeping the origin fixed, the co–ordinate axes are rotated through a fixed angle, then the same line has intercepts p and q on the rotated axes. Then
(a*) $a^2 + b^2 = p^2 + q^2$ (b) $\frac{1}{a^2}+\frac{1}{b^2}=\frac{1}{p^2}+\frac{1}{q^2}$
(c) $a^2 + p^2 = b^2 + q^2$ (d) $\frac{1}{a^2}+\frac{1}{p^2}=\frac{1}{b^2}+\frac{1}{q^2}$

20. The distance between the lines $3x + 4y = 6$ and $6x + 8y = 15$ is
(a) (3/2) (b*) (3/10) (c) 6 (d) none of these

21. The value of k for which point (2, – 3) lies on the curve $kx^2 – 3y^2 + 2x + y – 6 = 0$ is
(a) 16 (b) 12 (c) 10 (d*) 8

22. The locus of the mid–point of the portion intercepted between the axes by the line $x \cos \alpha + y \sin \alpha = p$ where p is a constant is
(a) $x^2 + y^2 = 4p^2$ (b*) $(1/x^2) + (1/y^2) = 4/p^2$
(c) $x^2 + y^2 = 4/p^2$ (d) $(1/x^2) + (1/y^2) = 2/p^2$

23. If $P \equiv (1, 0)$, $Q \equiv (– 1, 0)$ and $R \equiv (2, 0)$ are three given points, the locus of a point S satisfying the relation $SQ^2 + SR^2 = 2SP^2$ is
(a) a straight line 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

24. If the line $6x – y + 2 + k (2x + 3y + 13) = 0$ is parallel to x–axis, the value of k is
(a) – 1/3 (b) 1/3 (c*) – 3 (d) 3

25. The lines $3y – 2x = 5$, $4y – 3x = 1$ and $5y – 4x = a$ are concurrent if a equals
(a) 3 (b*) – 3 (c) 2 (d) 4

26. If $2a + 3b + 6c = 0$, the family of straight lines $ax + by + c = 0$ pass through a fixed point whose co–ordinates are :
(a) (2, 3) (b) (3, 2) (c) $\left(\frac{1}{2},\frac{1}{3}\right)$ (d*) $\left(\frac{1}{3},\frac{1}{2}\right)$

27. The triangle joining the points (2, 7), (4, – 1), (– 2, 6) is
(a) Equilateral (b*) right angled (c) Isosceles (d) None of these.

28. The points (1, 1), (– 1, – 1) and $(– \sqrt{3}, \sqrt{3})$ are the angular points of a triangle, then the triangle is
(a) Right angled (b) Isosceles (c*) Equilateral (d) None of these.

29. The line segment joining the points (– 3, – 4) and (1, – 2) is divided by y–axis in the ratio
(a) 1 : 3 (b) 2 : 3 (c*) 3 : 1 (d) 3 : 2

30. The straight lines $x + y – 4 = 0$, $3x + y – 4 = 0$, $x + 3y – 4 = 0$ form a triangle which is
(a*) Isosceles (b) Right angled (c) Equilateral (d) None of these.