MATHEMATICS (ASSIGNMENT-5)
TOPIC- STRAIGHT LINES

1. Two consecutive sides of a parallelogram are $4x + 5y = 0$ and $7x + 2y = 0$. One diagonal of the parallelogram is $11x + 7y = 9$. If the other diagonal is $ax + by + c = 0$, then

a) $a = -1, b = -1, c = 2$ b) $a = 1, b = -1, c = 0$

c) $a = -1, b = -1, c = 0$ d) $a = 1, b = 1, c = 1$

2. The straight lines $ax + by = c$, $bx + cy = a$ and $cx + ay = b$ are concurrent, if

a) $a + b = c$ b) $b + c = a$ c) $c + a = b$ d) $a + b + c = 0$

3. The lines represents by $ax^2 + 2hxy + by^2 = 0$ are perpendicular to each other, if

a) $h^2 = a + b$ b) $a + b = 0$ c) $h^2 = ab$ d) $h = 0$

4. If a, c, b are in G.P., then the line $ax + by + c = 0$

a) Has a fixed direction

b) Always passes through a fixed point

c) Forms a triangle with the axes whose area is constant

d) Always cuts intercepts on the axes such that their sum is zero

5. The angle between the lines represented by the equation $2x^2 + 3xy - 5y^2 = 0$, is

a) $\frac{\pi}{3}$ b) $\frac{\pi}{2}$ c) $\tan^{-1}\left|\frac{12}{5}\right|$ d) $\tan^{-1}\left|\frac{7}{3}\right|$

6. Consider the family of lines $(x + y - 1) + \lambda(2x + 3y - 5) = 0$ and $(3x + 2y - 4) + \mu(x + 2y - 6) = 0$, equation of the straight line that belongs to both the families is

a) $x - 2y - 8 = 0$ b) $x - 2y + 8 = 0$ c) $2x + y - 8 = 0$ d) $2x - y - 8 = 0$

7. If the bisectors of angles represented by $ax^2 + 2hxy + by^2 = 0$ and $a'x^2 + 2h'xy + b'y^2 = 0$ are same, then

a) $(a - b)h' = (a' - b')h$ b) $(a - b)h = (a' - b')h'$

c) $(a + b)h' = (a' - b')h$ d) $(a - b)h' = (a' + b')h$

8. Equation of the straight line making equal intercepts on the axes and passing through the point (2, 4), is

a) $4x - y - 4 = 0$ b) $2x + y - 8 = 0$ c) $x + y - 6 = 0$ d) $x + 2y - 10 = 0$

9. The image of the origin with reference to the line $4x + 3y - 25 = 0$, is

a) $(-8, 6)$ b) $(8, 6)$ c) $(-3, 4)$ d) $(8, -6)$

10. Two vertices of a triangle are $(5, -1)$ and $(-2,3)$. If the orthocentre of the triangle is the origin, then coordinates of the third vertex are

a) $(4,7)$ b) $(-4, -7)$ c) $(-4, 7)$ d) None of these

11. The distance between the lines $3x + 4y = 9$ and $6x + 8y = 15$ is

a) $\frac{3}{2}$ b) $\frac{3}{10}$ c) 6 d) None of these

12. The straight line $3x + 4y - 5 = 0$ and $4x = 3y + 15$ intersect at the point P. On these lines the points Q and R are chosen so that $PQ = PR$. The slopes of the lines QR passing through $(1, 2)$ are

a) $-7, 1/7$ b) $7, 1/7$ c) $7, -1/7$ d) $3, -1/3$

13. If $(-4, 5)$ is one vertex and $7x - y + 8 = 0$ is one diagonal of a square, then the equation of second diagonal is

a) $x + 3y = 21$ b) $2x - 3y = 7$ c) $x + 7y = 31$ d) $2x + 3y = 21$

14. The equation of one of the lines parallel to $4x - 3y = 5$ and at a unit distance from the point $(-1, -4)$ is

a) $3x + 4y - 3 = 0$ b) $3x + 4y + 3 = 0$ c) $4x - 3y + 3 = 0$ d) $4x - 3y - 3 = 0$

15. In order to eliminate the first degree terms from the equation $2x^2 + 4xy + 5y^2 - 4x - 22y + 7 = 0$, the point to which origin is to be shifted, is

a) $(1, -3)$ b) $(2, 3)$ c) $(-2, 3)$ d) $(1, 3)$

16. The equation of the base of an equilateral triangle is $x + y = 2$ and the vertex is $(2, -1)$, then the length of the side of the triangle is

a) $\sqrt{3/2} / \sqrt{2/3}$ b) $\sqrt{2}$ c) $\sqrt{2/3}$ d) $\sqrt{3/2}$

17. If $\lambda x^2 - 10xy + 12y^2 + 5x - 16y - 3 = 0$, represents a pair of straight lines, then the value of λ is

a) 4 b) 3 c) 2 d) 1

18. The distance of the point $(3, 5)$ from the line $2x + 3y - 14 = 0$ measured parallel to line $x - 2y = 1$, is

a) $\frac{7}{\sqrt{5}}$ b) $\frac{7}{\sqrt{13}}$ c) $\sqrt{5}$ d) $\sqrt{13}$

19. If non-zero numbers a, b, c are in HP, then the straight line $\frac{x}{a} + \frac{y}{b} + \frac{1}{c} = 0$ always passes through a fixed point. That point is

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

20. The orthocentre of the triangle formed by $(0,0), (8,0), (4,6)$ is

a) $(4, 8/3)$ b) $(3, 4)$ c) $(4, 3)$ d) $(-3, 4)$

21. The equation of the bisector of the obtuse angle between the lines $3x - 4y + 7 = 0$ and $-12x - 5y + 2 = 0$, is

a) $21x + 77y - 101 = 0$ b) $99x - 27y + 81 = 0$

c) $21x - 77y + 101 = 0$ d) None of these

22. The ratio in which the line $3x + 4y + 2 = 0$ divides the distance between $3x + 4y + 5 = 0$, and $3x + 4y - 5 = 0$, is

a) 7 : 3 b) 3 : 7 c) 2 : 3 d) None of these

23. The area enclosed within the curve $|x| + |y| = 1$, is

a) 1 sq. units b) 2 sq. units c) 3 sq. units d) 4 sq. units

24. Separate equations of lines for a pair of lines whose equation is $x^2 + xy - 12y^2 = 0$, are

a) $x + 4y = 0$ and $x + 3y = 0$ b) $2x - 3y = 0$ and $x - 4y = 0$

c) $x - 6y = 0$ and $x - 3y = 0$ d) $x + 4y = 0$ and $x - 3y = 0$

25. The nearest point on the line $3x - 4y = 25$ from the origin is

a) $(-4, 5)$ b) $(3, -4)$ c) $(3, 4)$ d) $(3, 5)$

ANSWER- KEY

1.	B	2.	D	3.	B	4.	C	5.	D	6.	B	7.	A
8.	C	9.	B	10.	B	11.	B	12.	A	13.	C	14.	D
15.	C	16.	C	17.	C	18.	A	19.	B	20.	A	21.	A
22.	B	23.	B	24.	D	25.	B						