PRACTICE QUESTIONS FOR COMPETITIVE EXAMINATIONS

SUB: MATHEMATICS

TOPIC: STRAIGHT LINES

1. Area of a triangle whose vertices are $(a\cos\theta, b\sin\theta)$, $(-a\sin\theta, b\cos\theta)$ and $(-a\cos\theta, -b\sin\theta)$ is -

(A) $ab\sin\theta\cos\theta$ (B) $a\cos\theta\sin\theta$ (C) $\frac{1}{2}ab$ (D) ab

2. The points with the co-ordinates (2a, 3a), (3b, 2b) & (c, c) are collinear-

(A) for no value of a, b, c (B) for all values of a, b, c

(C) if a, $\frac{c}{5}$, b are in H.P. (D) if a, $\frac{2}{5}c$, b are in H.P.

3. The equation of perpendicular bisector of the line segment joining the points (1, 2) and (–2, 0) is -

(A) $5x + 2y = 1$ (B) $4x + 6y = 1$ (C) $6x + 4y = 1$ (D) none of these

4. The line $(p + 2q)x + (p - 3q)y = p - q$ for different values of p and q passes through a fixed point whose co-ordinates are -

(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) $\left(\frac{2}{5}, \frac{3}{5}\right)$

5. Distance of the point (2, 5) from the line $3x + y + 4 = 0$ measured parallel to the line $3x - 4y + 8 = 0$ is -

(A) 15/2 (B) 9/2 (C) 5 (D) none

6. The number of possible straight lines, passing through (2, 3) and forming a triangle with coordinate axes, whose area is 12 sq. units, is -

(A) one (B) two (C) three (D) four

7. The equation of a straight line which passes through the point (–3, 5) such that the portion of it between the axes is divided by the point in the ratio 5 : 3, internally (reckoning from x-axis) will be -

(A) $x + y - 2 = 0$ (B) $2x + y + 1 = 0$ (C) $x + 2y - 7 = 0$ (D) $x - y + 8 = 0$

8. The circumcentre of the triangle with vertices (0, 0), (3, 0) and (0, 4) is -

(A) (1, 1) (B) (2, 3/2) (C) (3/2, 2) (D) none of these

9. If (3, –4) and (–6, 5) are the extremities of a diagonal of a parallelogram and (2, 1) is its third vertex, then its fourth vertex is -

(A) (–1, 0) (B) (–1, 1) (C) (0, –1) (D) (–5, 0)

10. The equation of the line passing through the point (c, d) and parallel to the line $ax + by + c = 0$ is -

(A) $a(x + c) + b(y + d) = 0$ (B) $a(x + c) - b(y + d) = 0$ (C) $a(x - c) + b(y - d) = 0$ (D) none of these

11. If origin and (3, 2) are contained in the same angle of the lines $2x + y - a = 0$, $x - 3y + a = 0$, then 'a' must lie in the interval -

(A) $(-\infty, 0) \cup (8, \infty)$ (B) $(-\infty, 0) \cup (3, \infty)$ (C) (0, 3) (D) (3, 8)

12. The area of triangle formed by the lines $x + y - 3 = 0$, $x - 3y + 9 = 0$ and $3x - 2y + 1 = 0$ is -

(A) $\frac{16}{7}$ sq. units (B) $\frac{10}{7}$ sq. units (C) 4 sq. units (D) 9 sq. units

13. If the point (a, 2) lies between the lines $x - y - 1 = 0$ and $2(x - y) - 5 = 0$, then the set of values of a is -

(A) $(-\infty, 3) \cup (9/2, \infty)$ (B) (3, 9/2) (C) $(-\infty, 3)$ (D) $(9/2, \infty)$

14. The points $\left(0, \frac{8}{3}\right)$, (1, 3) and (82, 30) are vertices of-

(A) an obtuse angled triangle (B) an acute angled triangle

(C) a right angled triangle (D) an isosceles triangle

15. The position of the point (8,–9) with respect to the lines $2x + 3y - 4 = 0$ and $6x + 9y + 8 = 0$ is -

(A) point lies on the same side of the lines (B) point lies on one of the lines

(C) point lies on the different sides of the line (D) point lies between the lines

16. The co-ordinates of the point of reflection of the origin (0, 0) in the line $4x - 2y - 5 = 0$ is -

(A) (1, –2) (B) (2, –1) (C) $\left(\frac{4}{5}, -\frac{2}{5}\right)$ (D) (2, 5)

17. Three vertices of triangle ABC are A(–1, 11), B(–9, –8) and C(15, –2). The equation of angle bisector of angle A is -

(A) $4x - y = 7$ (B) $4x + y = 7$ (C) $x + 4y = 7$ (D) $x - 4y = 7$

18. The point A divides the join of the points (–5,1) and (3,5) in the ratio k : 1 and coordinates of points B and C are (1,5) and (7,–2) respectively. If the area of ΔABC be 2 units, then k equals -

(A) 7,9 (B) 6,7 (C) 7,31/9 (D) 9,31/9

19. A line is perpendicular to $3x + y = 3$ and passes through a point (2, 2). Its y intercept is -

(A) 2/3 (B) 1/3 (C) 1 (D) 4/3

20. The equation of the line cutting an intercept of 3 units on negative y-axis and inclined at an angle $\tan^{-1}\frac{3}{5}$ to the x-axis is -

(A) $5y - 3x + 15 = 0$ (B) $5y - 3x = 15$ (C) $3y - 5x + 15 = 0$ (D) none of these

ANSWERS :

(1) D (2)D (3)C (4)D (5)C (6)C (7)D (8) C (9)D (10)C (11) A (12)B (13)B (14) D (15)A (16)B (17)B (18)C (19)D (20)A