

Model Question Paper 2
ANALYTICAL GEOMETRY 2

11th Standard

Maths

Reg.No. :

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Answer all the Questions

Time : 02:00:00 Hrs

Total Marks : 75

9 x 1 = 9

Part A

- 1) If the slope of a straight line is $\frac{2}{3}$, then the slope of the line perpendicular to it, is.....
(a) $\frac{2}{3}$ (b) $-\frac{2}{3}$ (c) $\frac{3}{2}$ (d) $-\frac{3}{2}$
- 2) The graph of $xy=0$ is.....
(a) a point (b) a line (c) a pair of intersecting lines (d) a pair of parallel lines
- 3) If the pair of straight lines given by $ax^2 + 2hxy + by^2 = 0$ are perpendicular, then
(a) $ab = 0$ (b) $a + b = 0$ (c) $a - b = 0$ (d) $a = 0$
- 4) When $h^2 = ab$, the angle between pair of straight lines $ax^2 + 2hxy + by^2 = 0$ is
(a) $\frac{\pi}{4}$ (b) $\frac{\pi}{6}$ (c) $\frac{\pi}{2}$ (d) 0°
- 5) If $2x^2 + 3xy - cy^2 = 0$ represents a pair of perpendicular lines then $c =$
(a) -2 (b) $-\frac{1}{2}$ (c) 2 (d) $\frac{1}{2}$
- 6) If $2x^2 + kxy + 4y^2 = 0$ represents a pair of parallel lines then $k =$
(a) ± 32 (b) $\pm 2\sqrt{2}$ (c) $\pm 4\sqrt{2}$ (d) ± 8
- 7) The condition for $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ to represent a pair of straight lines is.....
(a) $abc + 2fgh - bf^2 - ag^2 - ch^2 = 0$ (b) $abc + 2fgh - ag^2 - bf^2 - ch^2 = 0$ (c) $abc + 2fgh - ah^2 - bg^2 - cf^2 = 0$ (d) $abc + 2fgh - af^2 - bg^2 - ch^2 = 0$
- 8) The length of the diameter of a circle with centre (2,1) and passing through the point (-2,1) is.....
(a) 4 (b) 8 (c) $4\sqrt{5}$ (d) 2
- 9) Given that (1,-1) is the centre of the circle $x^2 + y^2 + ax + by - 9 = 0$, its radius is
(a) 3 (b) $\sqrt{2}$ (c) $\sqrt{17}$ (d) 11

Part B

10 x 2 = 20

- 10) Show that $9x^2 + 24xy + 16y^2 + 21x + 28y + 6 = 0$ represents a pair of parallel straight lines and find the distance between them.
- 11) The slope of one of the straight lines $ax^2 + 2hxy + by^2 = 0$ is twice that of the other, show that $8h^2 = 9ab$.
- 12) Find the combined equation of the straight lines through the origin, one of which is parallel to and the other is perpendicular to the straight line $2x + y + 1 = 0$.
- 13) Find the combined equation of the straight lines whose separate equations are $x + 2y - 3 = 0$ and $3x + y + 5 = 0$.
- 14) Find k such that the equation $12x^2 + 7xy - 12y^2 - x + 7y + k = 0$ represents a pair of straight lines. Find the separate equations of the straight lines and also the angle between them.
- 15) If the equation $12x^2 - 10xy + 2y^2 + 14x - 5y + c = 0$ represents a pair of straight lines, find the value of c . Find the separate equations of the straight lines and also the angle between them.
- 16) For what value of k does $12x^2 + 7xy + ky^2 + 13x + y + 3 = 0$ represent a pair of straight lines? Also write the separate equations.
- 17) Show that $3x^2 + 10xy + 8y^2 + 14x + 22y + 15 = 0$ represents a pair of straight lines and the angle between them is $\tan^{-1}(\frac{2}{11})$.
- 18) Show that the circles $x^2 + y^2 - 2x + 6y + 6 = 0$ and $x^2 + y^2 - 5x + 6y + 15 = 0$ touch each other.
- 19) Show that each of the circles $x^2 + y^2 + 4y - 1 = 0$, $x^2 + y^2 + 6x + y + 8 = 0$ and $x^2 + y^2 - 4x - 4y - 37 = 0$ touches the other two.

7 x 3 = 21

Part C

- 20) Find the equation of the straight line, which cut off intercepts on the axes whose sum and product are 1 and -6 respectively.
- 21) Find the intercepts made by the line $7x + 3y - 6 = 0$ on the co-ordinate axis.
- 22) What are the points on x-axis whose perpendicular distance from the straight line $\frac{x}{3} + \frac{y}{4} = 1$ is 4?
- 23) Find the distance of the line $4x - y = 0$ from the point (4,1) measured along the straight line making an angle of 135° with the positive direction of the x-axis.
- 24) Find the centre and radius of the following circles: $x^2 + y^2 = 1$
- 25) Find the centre and radius of the following circles:
 $x^2 + y^2 - 4x - 6y - 9 = 0$
- 26) Find the centre and radius of the following circles: $x^2 + y^2 - 8x - 6y - 24 = 0$

5 x 5 = 25

Part D

- 27) Find the equation of the tangent to the circle $x^2 + y^2 = 16$ which are perpendicular to the line $x + y = 8$
- 28) Find the equation of the tangent to the circle $x^2 + y^2 = 16$ which are parallel to the line $x + y = 8$
- 29) Find the equation of the tangent to the circle $x^2 + y^2 - 4x + 2y - 21 = 0$ at (1, 4).
- 30) Find the value of p so that the line $3x + 4y - p = 0$ is a tangent to $x^2 + y^2 - 64 = 0$
- 31) Find the co-ordinates of the middle point of the chord which the circle $x^2 + y^2 + 2x + y - 3 = 0$ cuts off by the line $y = x - 1$.
