

CONIC SECTION

EE24BTECH11029- JANAGANI SHRETHAN REDDY

A Fill in the blanks C MCQS with One Correct Answer

- 1) The equation $\frac{x^2}{1-r} - \frac{y^2}{1+r} = 1, r > 1$ represents:
(1981-2 Marks)
 - a) an ellipse
 - b) a hyperbola
 - c) a circle
 - d) none of there
- 2) Each of the four inequalities give below defines a region in xy plane. One of these four regions does not have the following property. For any two points $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$ is also in region. The inequality defining this region is: (1981-2 Marks)
 - a) $x^2 + 2y^2 \leq 1$
 - b) $\text{Max } |x|, |y| \leq 1$
 - c) $x^2 - y^2 \leq 1$
 - d) $y^2 - x \leq 0$
- 3) The equation $2x^2 + 3y^2 - 8x - 18y + 35 = k$ represents: (1994)
 - a) no locus if $k > 0$
 - b) an ellipse if $k < 0$
 - c) a point if $k = 0$
 - d) a hyperbola if $k > 0$
- 4) Let E be the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ and C be the circle $x^2 + y^2 = 9$. Let P and Q be the points $(1, 2)$ and $(2, 1)$ respectively. Then: (1994)
 - a) Q lies inside C but outside E
 - b) Q lies outside both C and E
 - c) P lies inside both C and E
 - d) P lies inside C but outside E
- 5) Consider a circle with its centre lying on focus of the parabola $y^2 = 2px$ such that it touches the directrix of the parabola. Then a point of intersection of the circle and the parabola is (1995S)
 - a) $\left(\frac{p}{2}, p\right)$ or $\left(\frac{p}{2}, -p\right)$
 - b) $\left(\frac{p}{2}, \frac{-p}{2}\right)$
 - c) $\left(\frac{-p}{2}, p\right)$
 - d) $\left(\frac{-p}{2}, \frac{-p}{2}\right)$
- 6) The radius of the circle passing through the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$. and having its centre at $(0, 3)$ is: (1995S)
 - a) 4
 - b) 3
 - c) $\sqrt{\frac{1}{2}}$
 - d) $\frac{7}{2}$
- 7) Let $P(a \sec \theta, b \tan \theta)$ and $Q(a \sec \phi, b \tan \phi)$, where $\theta + \phi = \pi/2$, be two points on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$. If (h, k) is the point of intersection of the normals at P and Q , then K equal to (1999-2 Marks)
 - a) $\frac{a^2+b^2}{a}$
 - b) $-\left(\frac{a^2+b^2}{a}\right)$
 - c) $\frac{a^2+b^2}{b}$
 - d) $-\left(\frac{a^2+b^2}{b}\right)$
- 8) If $x = 9$ is the chord of contact of the hyperbola $x^2 - y^2 = 9$, then the equation of the corresponding pair of tangents is: (1999-2 Marks)
 - a) $9x^2 - 8y^2 + 18x - 9 = 0$
 - b) $9x^2 - 8y^2 - 18x + 9 = 0$
 - c) $9x^2 - 8y^2 - 18x - 9 = 0$
 - d) $9x^2 - 8y^2 + 18x + 9 = 0$
- 9) The curve described parametrically by $x = t^2 + t + 1, y = t^2 - t + 1$ represents (1999-2 Marks)
 - a) a pair of straight lines
 - b) an ellipse
 - c) a parabola

d) a hyperbola

10) If $x + y = k$ is normal to $y^2 = 12x$, then K is
(2000s)

- a) 3
- b) 9
- c) -9
- d) -3

11) If the line $x - 1 = 0$ is the directrix of parabola $y^2 - kx + 8 = 0$, then one of the values of K is
(2000S)

- a) $1/8$
- b) 8
- c) 4
- d) $1/4$

12) The equation of the common tangent touching the circle $(x - 3)^2 - kx + 8 = 0$ and the parabola $y^2 = 4x$ above the x -axis is
(2000s)

- a) $\sqrt{3}y = 3x + 1$
- b) $\sqrt{3}y = -(x + 3)$
- c) $\sqrt{3}y = x + 3$
- d) $\sqrt{3}y = -(3x + 1)$

13) The equation of the directrix of the parabola $y^2 + 4y + 4x + 2 = 0$ is
(2001S)

- a) $x = -1$
- b) $x = 1$
- c) $x = -3/2$
- d) $x = 3/2$