CONIC SECTION

EE24BTECH11038 - MALAKALA BALA SUBRAHMANYA ARAVIND

I. SECTION B

31) A hyperbola passes through point $\mathbf{p}\left(\sqrt{2},\ \sqrt{2}\right)$ and has foci at $(\pm 2, 0)$. Then the tangent to this hyperbola at P also passes through the point :
(JEE M 2017)
   a) $\left(-\sqrt{2}, -\sqrt{3}\right)$
   b) $\left(3\sqrt{2}, 2\sqrt{3}\right)$
   c) $\left(2\sqrt{2}, 3\sqrt{3}\right)$
   d) $\left(\sqrt{3}, \sqrt{2}\right)$

32) The radius of a circle, having minimum area, which touches the curve $y = 4 - x^2$ and the lines $,y = |x|$ is :
(JEE M 2018)
   a) $4\left(\sqrt{2} + 1\right)$
   b) $2\left(\sqrt{2} + 1\right)$
   c) $2\left(\sqrt{2} - 1\right)$
   d) $4\left(\sqrt{2} - 1\right)$

33) Tangents are drawn to the hyperbola $4x^2 - y^2 = 36$ at the points $\mathbf{P}$ and $\mathbf{Q}$. If these tangents intersect at the point $\mathbf{T}(0, 3)$ then the area (in sq.units) of $\triangle$ PTQ is:
(JEE M 2018)
   a) $54\sqrt{3}$
   b) $60\sqrt{3}$
   c) $36\sqrt{3}$
   d) $45\sqrt{5}$

34) tangent and normal are drawn at $\mathbf{P}(16, 16)$ on the parabola $y^2 = 16x$, which is intersect the axis of the parabola at $\mathbf{A}$ and $\mathbf{B}$,respectively.If $\mathbf{C}$ is the centre of the circle through the points $\mathbf{P}, \mathbf{A}$ and $\mathbf{B}$ and $\angle$ CPB=θ, then the value of $\tan\theta$ is :
(JEE M 2018)
   a) 2
   b) 3
   c) $\frac{4}{3}$
   d) $\frac{1}{2}$

35) Two sets A and B are as under:
$A = \{(a, b) \in \mathbb{R} \times \mathbb{R} : |a - 5| < 1 \text{ and } |b - 5| < 1\}$
$B = \{(a, b) \in \mathbb{R} \times \mathbb{R} : 4(a - 6)^2 + 9(b - 5)^2 \le 36\}$
(JEE M 2018)
   a) $A \subset B$

   b) $A \cap B$
   c) neither $A \subset B$ nor $B \subset A$
   d) $B \subset A$

36) If the tangent at $(1, 7)$ to the curve $x^2 = y - 6$ touches the circle $x^2 + y^2 + 16x + 12y + c = 0$ then the value of c is :
(JEEM 2018)
   a) 185
   b) 85
   c) 95
   d) 195

37) Axis of a parabola lies along X-axis.If its vertex and focus are at a distance 2 and 4 respectively from origin, on the positive X-axis then which of the following points does not lie on it?
(JEE M 2018)
   a) $\left(5, 2\sqrt{6}\right)$
   b) $(8, 6)$
   c) $\left(6, 4\sqrt{2}\right)$
   d) $(4, -4)$

38) Let $0 < \theta < \pi/2$ .If the eccentricty of the hyperbola $\frac{x^2}{\cos^2\theta} - \frac{y^2}{\sin^2\theta} = 1$ is greater than 2, then the length of its latus rectum lies in the interval:
(JEE M 2019-9 Jan(M))
   a) $(3, \infty)$
   b) $(3/2, 3]$
   c) $(2, 3]$
   d) $(1, 3/2]$

39) Equation of a common tangent to the circle $x^2 + y^2 - 6x = 0$ and the parabola $y^2 = 4x$, is:
(JEE M 2019-9 Jan(M))
   a) $2\sqrt{3}y = 12x + 1$
   b) $\sqrt{3}y = x + 3$
   c) $2\sqrt{3}y = -x - 12$
   d) $\sqrt{3}y = 3x + 1$

40) If the line y=mx+7$\sqrt{3}$ is normal to the hyperbola $\frac{x^2}{24} - \frac{y^2}{18}$ then a value of m is:
(JEEM 2019-9 April(M))
   a) $\frac{\sqrt{5}}{2}$
   b) $\frac{\sqrt{15}}{2}$
   c) $\frac{2}{\sqrt{5}}$

d) $\frac{3}{\sqrt{5}}$

41) if one end of a focal chord of the parabola, $y^2 = 16x$ is at $(1,4)$, then the length of this focal chord is :　　　　(JEE M 2019-9 Jan(M))

a) 25
b) 22
c) 24
d) 20