

# CONIC SECTION

EE24BTECH11038 - MALAKALA BALA SUBRAHMANYA ARAVIND

## I. SECTION B

31. A hyperbola passes through point  $p(\sqrt{2}, \sqrt{3})$  and has foci at  $(\pm 2, 0)$ . Then the tangent to this hyperbola at P also passes through the point :  
(JEE M 2017)  
(A)  $(-\sqrt{2}, -\sqrt{3})$  (B)  $(3\sqrt{2}, 2\sqrt{3})$   
(C)  $(2\sqrt{2}, 3\sqrt{3})$  (D)  $(\sqrt{3}, \sqrt{2})$
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)  $4(\sqrt{2}+1)$  (B)  $2(\sqrt{2}+1)$   
(C)  $2(\sqrt{2}-1)$  (D)  $4(\sqrt{2}-1)$
33. Tangents are drawn to the hyperbola  $4x^2 - y^2 = 36$  at the points P and Q. If these tangents intersect at the point T(0,3) then the area (in sq.units) of  $\Delta PTQ$  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 P(16,16) on the parabola  $y^2 = 16x$ , which intersect the axis of the parabola at A and B, respectively. If C is the centre of the circle through the points P, A and B and  $\angle CPB = \theta$ , then the value of  $\tan \theta$  is :  
(JEE M 2018)  
(A) 2 (B) 3  
(C)  $4/3$  (D)  $1/2$
35. Two sets A and B are as under:  
 $A = \{(a,b) \in \mathbb{R} \times \mathbb{R} : |a-5| < 1 \text{ and } |b-5| < 1\}$ ;  
 $B = \{(a,b) \in \mathbb{R} \times \mathbb{R} : 4(a-6)^2 + 9(b-5)^2 \leq 36\}$ . Then:  
(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) (5,  $2\sqrt{6}$ ) (B) (8, 6)  
(C) (6,  $4\sqrt{2}$ ) (D) (4, -4)
38. Let  $0 < \theta < \pi/2$ . If the eccentricity 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  $\frac{x^2}{24} - \frac{y^2}{18} = 1$  then a value of m is:  
(JEEM 2019-9 April(M))  
(A)  $\sqrt{5}/2$  (B)  $\sqrt{15}/2$   
(C)  $2/\sqrt{5}$  (D)  $3/\sqrt{5}$
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