

Mathematics ECAT Pre Engineering Online Test

Sr	Questions	Answers Choice
1	The second degree equation $2x^2 - xy + 5x - 2y + 2 = 0$ represents	A. Circle B. Hyperbola C. Ellipse D. Pair of straight lines
2	If the line $2x - y + k = 0$ is a diameter of the circle $x^2 + y^2 + 6x - 6y + 5 = 0$ then k is equal to	A. 12 B. 9 C. 6 D. 3
3	The area of the circle centred at (1,2) and passing through (4,6) is	A. 30π sq.units B. 5π sq.units C. 15π sq.units D. 25π sq.units
4	The number of tangents to the circle $x^2 + y^2 - 8x - 6y + 9 = 0$ which pass through the point (3,-2) is	A. 2 B. 1 C. 0 D. None of these
5	The slope of the tangent at the point (h,h) of the circle $x^2 + y^2 = a^2$ is	A. 0 B. 1 C. -1 D. h
6	The equation $x^2 + y^2 - 8x + 6y + 25 = 0$ represents	A. A circle B. A pair of straight lines C. A point D. None of these
7	Two circle s1: $x^2 + y^2 + 2x - 2y - 7 = 0$; s2: $x^2 + y^2 - 6x + 4y + 9 = 0$	A. Touch externally B. Touch internally C. Intersects each other D. Do not intersects
8	The tangent to the parabola $y^2 = 4ax$ and perpendicular line from the focus on it meet	A. $x = 0$ B. $y = 0$ C. $x = -9$ D. $y = -a$
9	If $2x + y + \lambda = 0$ is normal to parabola $y^2 = -8x$, $\lambda =$ _____	A. 12 B. 8 C. 24 D. -24
10	The line $y = mx + 1$ is tangent to the parabola $y^2 = 4x$ if	A. $m = 1$ B. $m = 2$ C. $m = 3$ D. $m = 4$
11	If (2,0) is the vertex and y-axis is directrix of parabola then focus is	A. (2,0) B. (-2,0) C. (4,0) D. (-4,0)
12	Number of conics is	A. 1 B. 3 C. 2 D. 4
13	The vertex of the parabola $(x \sin a - y \cos a)^2 = 4a(x \cos a + y \sin a)$ lies at	A. $(a \cos a, a \sin a)$ B. $(a, 0)$ C. $(\cos a, \sin a)$ D. $(0, 0)$
14	The number of standard parabolic functions are is	A. 4 B. 2 C. 3 D. 1
15	The parabola $y^2 = 4ax$ open up if	A. $a < 0$ B. $a \neq 0$ C. $a > 0$ D. All are incorrect

16	$y = -a$ is the equation of the directrix of	A. $y^2 = 4ax$ B. $x^2 = -4ay$ C. $x^2 = 4ay$ D. $y^2 = -4ax$
17	Equation of normal to the circle $x^2 + y^2 = 25$ at $(5\cos\theta, 5\sin\theta)$	A. $x\cos\theta + y\sin\theta = 5$ B. $x\cos\theta - y\sin\theta = 0$ C. $x\sin\theta - y\cos\theta = 0$ D. None of these
18	For what value of k , $3x - 2y + k = 0$ is tangent to the circle $x^2 + y^2 + 6x - 4y = 0$	A. $k = 0$ B. $k = 0$ or 26 C. $k = 26$ D. $k = -13$
19	Two circles $x^2 + y^2 + 8x - 9 = 0$ and $x^2 + y^2 + 6y + k = 0$ touch internally if the value of k is	A. $k = 9$ B. $k = \pm 9$ C. $k = -9$ D. $k = 11$
20	The line joining the center of a circle to the midpoint of the chord is	A. Perpendicular to the tangent B. Perpendicular to the normal C. Perpendicular to the chord D. Perpendicular to the chord
21	Equation of the chord of contact to the tangents drawn from $(-3, 4)$ to the circle $x^2 + y^2 = 21$	A. $-3x + 4y = 21$ B. $4x - 3y = 0$ C. $-3x + 4y = 25$ D. None of these
22	Area of the circle with ends of a diameter at $(-3, 2)$ and $(5, -6)$	A. 128π sq. units B. 64π sq. units C. 32π sq. units D. None of these
23	Two tangents drawn from $(2, 3)$ to the circle $x^2 + y^2 = 9$ are	A. Real and distinct B. Imaginary C. Real and coincident D. None of these
24	The centre of the circle $x^2 + y^2 - 2fx - 2gy + x = 0$ is	A. $(-g, -f)$ B. (g, f) C. (f, g) D. $(-f, -g)$
25	$x = r \cos\theta, y = r \sin\theta$ are the parametric equations of	A. Circle B. Ellipse C. Parabola D. Hyperbola
26	The common point to four standard parabolas	A. Focus B. Centre C. Vertex D. $P(x, y)$
27	Equation of parabola with focus $F(-3, 1)$ directrix $x = 3$ is	A. $(y - 1)^2 = -12x$ B. $(y - 1)^2 = 4x$ C. $(x + 3)^2 = 4a(y - 1)$ D. $y^2 = -12(x - 1)$
28	The span of a standard parabola depends upon	A. x B. a C. y D. y^2
29	If $a > 0$ the parabola $y^2 = -4ax$ lies in	A. I and IV quadrant B. I quadrant C. II and III quadrant D. All are incorrect
30	The conic $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ never represents a circle if	A. $a \neq b, h \neq 0$ B. $a = b$ C. $h \neq 0$ D. $h = 0$