

## ECAT Pre General Science Mathematics Online Test

| Sr | Questions                                                                                                               | Answers Choice                                                                                                                                                                       |
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| 1  | The slope of the tangent of the circle $x^3 + y^3 = 25$ at (4,3) is:                                                    | A. -4/5<br>B. 4/3<br>C. -25/4<br>D. 25/3                                                                                                                                             |
| 2  | The points of intersection of the line $y = 2x - 3$ and the circle $x^2 + y^2 - 3x - 2y - 3 = 0$ are:                   | A. two<br>B. three<br>C. less than two<br>D. not intersect                                                                                                                           |
| 3  | If one end of the diameter of the circle $x^2 + y^2 - 5x + 3y - 22 = 0$ is (3,4) the other end is:                      | A. (2,7)<br>B. (-2,-7)<br>C. (-2,7)<br>D. (2,-7)                                                                                                                                     |
| 4  | If one end of the diameter of the circle $2x^2 + 2y^2 - 8x - 4y + 2 = 0$ is (2,3), the other end is:                    | A. (2,1)<br>B. (-2,1)<br>C. (2,-1)<br>D. (1,-1)                                                                                                                                      |
| 5  | Two circle $x^2 + y^2 + 2x - 8 = 0$ and $x^2 + y^2 - 6x - 46 = 0$ :                                                     | A. touch internally<br>B. do not intersect<br>C. touch externally<br>D. None of these                                                                                                |
| 6  | Circle $x^2 + y^2 - 2y - y = 0$ and $x^2 + y^2 - 8y - 4 = 0$ :                                                          | A. Intersect<br>B. touch externally<br>C. touch internally<br>D. do not touch                                                                                                        |
| 7  | The point of contact of the circles $x^2 + y^2 - 6x - 6y + 10 = 0$ and $x^2 + y^2 = 2$ is                               | A. (-3,2)<br>B. (1,3)<br>C. (-2,-1)<br>D. None of these                                                                                                                              |
| 8  | The radius of the circle $x^2 + y^2 - 6x + 4y + 13 = 0$ is                                                              | A. 1<br>B. 2<br>C. 0<br>D. None of these                                                                                                                                             |
| 9  | The area of the circle centred at (1,2) and passing through (4,6) is:                                                   | A. $10\pi$<br>B. $25\pi$<br>C. $5\pi$<br>D. $25/2\pi$                                                                                                                                |
| 10 | The equation $x^2 + y^2 + 2g + 2fy + c = 0$ represents a circle whose centre is :                                       | A. (g,f)<br>B. (-g,-f)<br>C. (2g,2f)<br>D. (-2f,-2g)                                                                                                                                 |
| 11 | The radius of the circle $2x^2 + 2y^2 - 4x + 12y + 11 = 0$ is:                                                          | A. $\sqrt{4.5}$<br>B. $\sqrt{11}$<br>C. $\sqrt{29}$<br>D. $\sqrt{15}$                                                                                                                |
| 12 | Parametric equation of circle : $x^2 + y^2 + r^2$ , are                                                                 | A. $r = x \cos \theta$ $r \sin \theta = y$<br>B. $x = r \cos \theta$ $y = r \sin \theta$<br>C. $x = r \sin \theta$ $y = r \cos \theta$<br>D. $x = r \cos \theta$ $y = r \sin \theta$ |
| 13 | The general equation of circle $x^2 + y^2 + 2gx + 2fy + c = 0$ , contains:                                              | A. Three independent variables<br>B. Two independent constants<br>C. Three independent parameters<br>D. Three independent constants                                                  |
| 14 | The three noncollinear points through which a circle passes are known, then we can find the:                            | A. Variables x and y<br>B. Value of x and c<br>C. three constants f,g and c<br>D. inverse of the circle                                                                              |
| 15 | A second degree equation in which coefficients of $x^2$ and $y^2$ are equal and there is no product term xy represents: | A. a parabola<br>B. a circle<br>C. an ellipse<br>D. a hyperbola                                                                                                                      |

|    |                                                                                                                                |                                                                                                                           |
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|    |                                                                                                                                | D. a pair of lines                                                                                                        |
| 16 | Apollonius was a:                                                                                                              | A. Rocket<br>B. Muslims scientist<br>C. Greek mathematicians<br>D. Method of finding conics                               |
| 17 | The study conics, pappus used the method of:                                                                                   | A. analytic geometry Euclidean<br>B. solid geometry<br>C. Greek mathematicians<br>D. None of these                        |
| 18 | The familiar plane curves, namely circle, ellipse, parabola and hyperbola are called:                                          | A. cones<br>B. conics<br>C. nappes<br>D. apex                                                                             |
| 19 | If the cutting plane is parallel to the axis of the cone and intersects both of its nappes, then the curve of intersection is: | A. an ellipse<br>B. a circle<br>C. a parabola<br>D. a hyperbola                                                           |
| 20 | The exact value of $\cos^{-1}(-1) + \cos^{-1}(1) =$                                                                            | A. $\pi$<br>B. $-\pi$<br>C. $\pi/2$<br>D. $\pi/3$                                                                         |
| 21 | The exact value of $\cos^{-1}(0)$ is                                                                                           | A. $\pi/2$<br>B. $-\pi/2$<br>C. $3\pi$<br>D. $\pi - \pi/6$                                                                |
| 22 | $\cos^{-1} \frac{12}{13} =$                                                                                                    | A. $\tan^{-1} \frac{3}{5}$<br>B. $\cot^{-1} \frac{13}{12}$<br>C. $\sec^{-1} \frac{13}{12}$<br>D. $\sin^{-1} \frac{5}{13}$ |
| 23 | $\cos^{-1}(\cos x) =$                                                                                                          | A. $x$<br>B. $\cos x$<br>C. $x = 1/x$<br>D. $\cos^{-2} x$                                                                 |
| 24 | $\cos^{-1}(x) =$                                                                                                               | A. $\cos x$<br>B. $x$<br>C. $\tan^{-1}(-x)$<br>D. $\sec^{-1}(1/x)$                                                        |
| 25 | $\cos^{-1}(-x) =$                                                                                                              | A. $-x$<br>B. $1/x$<br>C. $\tan^{-1} x$<br>D. $\pi - \cos^{-1} x$                                                         |
| 26 | If $\pi \leq x \leq 2\pi$ , then $\cos^{-1}(\cos x) =$                                                                         | A. $\cos x$<br>B. $-x$<br>C. $1/x$<br>D. $-x$                                                                             |
| 27 | If $\cos(2 \sin^{-1} x) = 1/9$ , then what is the value of $x$ ?                                                               | A. $1/3$<br>B. $-2/3$<br>C. $2/3$<br>D. $2/3, -2/3$                                                                       |
| 28 | $\cos(\cos 4\pi/3) =$                                                                                                          | A. $\pi/2$<br>B. $\pi/3$<br>C. $2\pi/3$<br>D. $-\pi/3$                                                                    |
| 29 | The exact degree value of the function $\sin^{-1}(-\sqrt{3}/2)$ is                                                             | A. $70^\circ$<br>B. $50^\circ$<br>C. $90^\circ$<br>D. $60^\circ$                                                          |
| 30 | What is the value of $\cos(\cos^{-1} 2)$ ?                                                                                     | A. $\sqrt{2}$<br>B. $1/2$<br>C. undefined<br>D. 0                                                                         |