

## Mathematics ECAT Pre Engineering Online Test

Sr	Questions	Answers Choice
1	The value of $k$ ( $k > 0$ ) for which the equation $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ both will have real roots is	A. 8 B. -16 C. -64 D. 16
2	The set of real roots of the equation $\log_{(5x+4)}(2x+3)^3 - \log_{(2x+3)}(10x^2 + 23x + 12) = 1$ is	A. $\{-1\}$ B. $\{-3/5\}$ C. Empty set D. $\{-1/3\}$
3	Question Image	A. $(a - c)^2 = b^2 - c^2$ B. $(a - c)^2 = b^2 + c^2$ C. $(a + c)^2 = b^2 - c^2$ D. $(a + c)^2 = b^2 + c^2$
4	If $x^2 + px + 1$ is a factor of $ax^3 + bx + c$ , then	A. $a^2 + c^2 = -ab$ B. $a^2 - c^2 = -ab$ C. $a^2 - c^2 = ab$ D. None of these
5	Question Image	A. $n$ if $n$ is even B. 0 for any natural number $n$ C. 1 if in odd D. None of these
6	The roots of the equation $2^{2x} - 10 \cdot 2^x + 16 = 0$ are	A. 2, 8 B. 1, 3 C. 1, 8 D. 2, 3
7	Question Image	
8	The value of $p$ for which both the roots of the equation $4x^2 - 20x + (25p^2 + 15p - 66) = 0$ are less than 2, lies in	
9	If the roots of $ax^2 + bx + c = 0$ are equal in magnitude but opposite in sign, then	A. $a = 0$ B. $b = 0$ C. $c = 0$ D. None of these
10	Question Image	A. $b = c$ B. $a = c$ C. $a = c$ D. $b = 0$
11	The quadratic equation $8 \sec^2 \theta - 6 \sec \theta + 1 = 0$ has	A. Infinitely many roots B. Exactly two roots C. Exactly four roots D. No roots
12	If $a > 0$ , $b > 0$ , $c > 0$ , then the roots of the equation $ax^2 + bx + c = 0$ are	A. Real and negative B. Non-real with negative real parts C. Real and positive D. Nothing can be said
13	If one root of the equation $ix^2 - 2(i + 1)x + (2 - i) = 0$ is $2 - i$ , then the other root is	A. $-i$ B. $2 + i$ C. $i$ D. $2 - i$
14	If the roots of $ax^2 + b = 0$ are real and distinct then	A. $ab > 0$ B. $a = 0$ C. $ab < 0$ D. $a > 0, b > 0$
15	If $ax^2 + bx + x = 0$ is satisfied by every value of $x$ , then	A. $b = 0, c = 0$ B. $c = 0$ C. $b = 0$

D.  $a = b = c = 0$

16	Both the roots of the equation $(x - b)(x - c) + (x - c)(x - a) + (x - a)(x - b) = 0$ are always	A. Positive B. Negative C. Real D. None of these
17	Question Image	
18	Question Image	
19	The condition for polynomial equation $ax^2 + bx + c = 0$ to be quadratic is	
20	Question Image	A. $9/4$ B. $4/9$ C. 1 D. None of these
21	Question Image	A. $2s^{2/3}$ B. $2s^{3/3}$ C. $s^{3/3}$ D. $3s^{3/3}$
22	Question Image	A. $K/6$ B. $2K$ C. $3K$ D. $6K$
23	Let A is a $3 \times 3$ matrix and B is its adjoint matrix. If $ B  = 64$ , then $ A  =$	
24	Question Image	A. 0 B. Independent of a C. Independent of b D. Independent of c
25	Question Image	A. 0 B. abc C. $1/abc$ D. None of these
26	Question Image	
27	Question Image	A. Orthogonal B. Involutary C. Idempotent D. Nilpotent
28	Question Image	A. $a = 4, b = 1$ B. $a = 1, b = -4$ C. $a = 0, b = 4$ D. $a = 2, b = 4$
29	Question Image	
30	Question Image	A. Symmetric B. Skew-symmetric C. Hermitian D. Skew hermitian