

Mathematics ECAT Pre Engineering Online Test

Sr	Questions	Answers Choice
1	$(x+a)(x+b)(x+c)(x+d) = k$, $k \neq 0$ is reducible to quadratic form only if	A. $a+b=c+d$ B. $a+c=b+d$ C. $a+d=b+c$ D. All are correct
2	The value of x for which the polynomials $x^2 - 1$ and $x^2 - 2x + 1$ vanish simultaneously is	A. 2 B. 1 C. -1 D. -2
3	The expression $x^2 - x + 1$ has	A. One proper linear factor B. No proper linear factor C. Two proper linear factors D. None of these
4	The condition for $ax^2 + bx + c$ to be expressed as the product of linear polynomials is	A. $b^2 - 4ac = 0$ B. $b^2 - 4ac \geq 0$ C. $b^2 - 4ac \leq 0$ D. $b^2 = 4ac$
5	If the equation $x^2 + 2x - 3 = 0$ and $x^2 + 3x - k = 0$ have a common root then the non-zero value of k is	A. 1 B. 3 C. 2 D. 4
6	Consider the equation $px^2 + qx + r = 0$ where p, q, r are real The roots are equal in magnitude but opposite in sign when	A. $q = 0, r = 0, p \neq 0$ B. $p = 0, qr \neq 0$ C. $r = 0, pq \neq 0$ D. $q = 0, pq \neq 0$
7	If α, β are the roots of the equation $x^2 + kx + 12 = 0$ such that $\alpha - \beta = 1$, the value of k is	A. 0 B. ± 1 C. ± 5 D. ± 7
8	The positive value of k for which the equation $x^2 + kx + 64 = 0$ has one of the roots 0	A. 4 B. 64 C. 8 D. All values of k
9	The sum of the roots of the equation $x^2 - 6x + 2 = 0$ is	A. -6 B. 2 C. -2 D. 6
10	The roots of $ax^2 + bx + c = 0$ are always unequal if	A. $b^2 - 4ac = 0$ B. $b^2 - 4ac \neq 0$ C. $b^2 - 4ac \geq 0$ D. $b^2 - 4ac \leq 0$
11	A polynomial of arbitrary degree	A. $f(x) = 0$ B. $f(x) = x$ C. $f(x) = a$ D. $f(x) = ax + b, a \neq 0$
12	$(1+w)(1+w^2)(1+w^4)(1+w^8) \dots 50$ factors	A. 0 B. -1 C. 1 D. 2
13	If $x - 1$ is a factor of $x^4 - 5x^2 + 4$ then other factor is	A. $(x+2)^2(x-1)$ B. $(x+2)(x-1)^2$ C. $(x+2)(x^2 - x - 2)$ D. $(x+2)^2(x-1)^2$
14	The two parts into which 57 should be divided so that their product is 782 are	A. 43, 14 B. 34, 23 C. 33, 24 D. 44, 13
15	The roots of the equation $4x^3 - 3.2x^2 + 32 = 0$ would include	A. 1 and 3 B. 1 and 4 C. 1 and 2 D. 2 and 3

16	If one root of $5x^2 + 13x + k = 0$ be the reciprocal of the other root the value of k is	A. 0 B. 2 C. 1 D. 5
17	If α, β are the roots of the equation $x^2 - 8x + p = 0$ and $\alpha^2 + \beta^2 = 40$, then value of p is	A. 8 B. 12 C. 10 D. 14
18	A diagonal matrix is always	A. Identity B. Triangular C. Scalar D. Non-singular
19	The matrix $A = [a_{ij}]_{m \times n}$ with $m \neq n$ is always	A. Symmetric B. Hermitian C. Skew-symmetric D. None
20	The matrix $A = [a_{ij}]_{1 \times n}$ is a	A. Vector B. Rectangular matrix C. Column vector D. Square matrix
21	The matrix $A = [a_{ij}]_{m \times n}$ with $m \neq n$ is	A. Rectangular B. Symmetric C. Square D. None
22	If the matrices A and B have the order 1×10 and 10×1 then order of AB is	A. 1×1 B. 1×10 C. 10×10 D. 10×1
23	If A and B are skew-symmetric then $(AB)^t$ is	A. $A^t B^t$ B. AB C. -AB D. BA
24	Every identity matrix is	A. Row-vector B. Scalar C. Column-vector D. All
25	A non-homogeneous linear system $AX = B$ has no solution if	A. $ A = 0$ B. $ A \neq 0$ C. Rank (a) = no of variables D. Rank $\geq$ no of variables
26	If A is a non-singular matrix then $\text{adj } A$ is	A. Non-singular B. Symmetric C. Singular D. Non defined
27	Matrix multiplication is	A. Commutative B. Not commutative C. Not associative D. Not distributive
28	If $A = [a_{ij}]_{m \times p}$ and $B = [a_{ij}]_{p \times n}$ then order of BA is	A. $m \times n$ B. $p \times n$ C. $n \times m$ D. None of these
29	$A = [3]$ is a/an	A. Square matrix B. Scalar matrix C. Diagonal matrix D. Identity matrix
30	Question Image	D. all are correct