

Mathematics ECAT Pre Engineering Online Test

Sr	Questions	Answers Choice
1	For any set B, $B \cup B'$ is	A. Is set B B. Set B' C. Universal set
2	The set $(\mathbb{Z}, +)$ forms a group	A. Forms a group w.r.t addition B. Non commutative group w.r.t multiplication C. Forms a group w.r.t multiplication D. Doesn't form a group
3	The set $\mathbb{Q}$	A. Forms a group under addition B. Does not form a group C. Contains no additive identity D. Contains no additive inverse
4	The statement that a group can have more than one identity elements is	A. True B. False C. Fallacious D. Some times true
5	The set of all positive even integers is	A. Not a group B. A group w.r.t subtraction C. A group w.r.t division D. A group w.r.t multiplication
6	The set $\{1, -1, i, -i\}$ form a group under	A. Addition B. Multiplication C. Subtraction D. None
7	The multiplicative inverse of -1 in the set $\{1, -1\}$ is	A. 1 B. -1 C. ± 1 D. 0 E. Does not exist
8	The set of complex numbers forms a group under the binary operation of	A. Addition B. none of these C. Division D. Subtraction
9	The graph of a quadratic function is	A. Circle B. Ellipse C. Parabola D. Hexagon
10	The set of the first elements of the ordered pairs forming a relation is called its	A. Function on B B. Range C. Domain D. A into B
11	The set $\{\{a, b\}\}$ is	A. Infinite set B. Singleton set C. Two points set D. None
12	Which of the following is the subset of all sets	A. Φ B. $\{1, 2, 3\}$ C. $\{\Phi\}$ D. $\{0\}$
13	In school there are 150 students Out of these 80 students enrolled for mathematics class 50 enrolled for English class and 60 enrolled for Physics class The student enrolled for English cannot attend any other class but the students of mathematics and Physics can take two courses at a time Find the number of students who have taken both physics and mathematics.	A. 40 B. 30 C. 50 D. 20
14	Multiplicative inverse of "1" is	A. 0 B. ± 1 C. 1 D. $\{0, 1\}$
15	The multiplicative inverse of x such that $x \neq 0$ is	A. -x B. Does not exist C. $1/x$ D. $-1/x$

		D. ± 1
16	The complement of set A relative to universal set U is the set	A. $\{x / x \in A \wedge x \in U\}$ B. $\{x / x \notin A \wedge x \in U\}$ C. $\{x / x \in A \text{ and } x \notin U\}$ D. $A - U$
17	Let A,B, and C be any sets such that $A \cup B = A \cup C$ and $A \cap B = A \cap C$ then	A. $A \neq C$ B. $B = C$ C. $A = B$ D. $A \neq B$
18	Given X,Y are any two sets such that number of elements in set X = 28, number of elements in set Y = 28, and number of elements in set $X \cup Y = 54$, then number of elements in set $X \cap Y =$	A. 4 B. 3 C. 2 D. 1
19	For any set X, $X \cup X$ is	A. X B. X' C. Φ D. Universal Set
20	$G = \{e, a, b, c\}$ is an Abelian group with e as identity element The order of the other elements are	A. 2,2,2 B. 3,3,3 C. 2,2,4 D. 2,3,4
21	Z is the set of integers (Z^*) is a group with $a * b = a + b + 1$, $a, b \in G$. then inverse of a is	A. -a B. $a + 1$ C. $-1 - a$ D. None of these
22	$\sqrt{-1}b = ?$	A. b i B. -i b C. b2 D. $i\sqrt{b}$
23	Which of the following has the same value as i^{113}	A. i B. -1 C. -i D. 1
24	What is the conjugate of $-6 - i$	A. $-6 + i$ B. $6 + i$ C. $-6 - i$ D. $6 - i$
25	Which element is the additive inverse of (a,b) in Complex numbers	A. (a,0) B. (0,b) C. (a,b) D. $(-a,-b)$
26	If $z_1 = 2 + 6i$ and $z_2 = 3 + 7i$ then which expression defines the product of z_1 and z_2	A. $36 + (-32)i$ B. $-36 + 32i$ C. $6 + (-11)i$ D. $0, +(-12)i$
27	If $Z_1 = 1 + i$, $Z_2 = 2 + 3i$, then $ Z_1 - Z_2 = ?$	A. $\sqrt{5}$ B. $\sqrt{7}$ C. $-1 - 2i$ D. $\sqrt{3}$
28	$i^{101} =$	A. i B. $i^{>2}$ C. -i D. -1
29	The polar form of complex number $x \neq 0$ is	A. $r \cos \theta + i r \sin \theta$ B. $r \cos \theta + i r \sin \theta$ C. $\cos \theta + i r \sin \theta$ D. $i \cos \theta + i r \sin \theta$
30	$(7,9) + (3,-5) =$	A. (4,4) B. (10,4) C. (9,-5) D. (7,3)