

Mathematics ECAT Pre Engineering Chapter 10 Mathematical Inductions Online Test

Sr	Questions	Answers Choice
1	If the exponent in the binomial expansion is 6, then the middle term is	A. 2nd B. 3rd C. 4th D. 5th
2	The first three terms in the expansion of $(1 - x)^{-3}$ are	A. $1 + 3x + 6x^2$ B. $1 - 3x + 6x^2$ C. $-3 - 3x - 6x^2$ D. $1 - 3x - 6x^2$
3	The first three terms in the expansion of $(1 - x)^{-2}$ are	A. $1 - 2x + 3x^2$ B. $1 - 2x - 3x^2$ C. $1 + 2x + 3x^2$ D. $-2 - 2x + 3x^2$
4	The first three terms in the expansion of $(1 - x)^{-1}$ are	A. $1 + x + x^2$ B. $1 - x - x^2$ C. $-1 - x + x^2$ D. $1 - x + x^2$
5	The first three terms in the expansion of $(1 + x)^3$ are	A. $1 + 3x + 6x^2$ B. $1 - 3x + 6x^2$ C. $-3 - 3x - 6x^2$ D. $1 - 3x - 6x^2$
6	The first three terms in the expansion of $(1 + x)^{-2}$ are _____	A. $1 - 2x + 3x^2$ B. $1 - 2x - 3x^2$ C. $1 + 2x + 3x^2$ D. $-2 - 2x + 3x^2$
7	The first three terms in the expansion of $(1 + x)^{-1}$ are	A. $1 + x + x^2$ B. $1 - x - x^2$ C. $-1 - x + x^2$ D. $1 - x + x^2$
8	The sum of coefficients in the binomial expansion equals to	A. 2 B. 2^{n+1} C. 2^{n-1} D. 2^n
9	Question Image	A. Even B. Odd C. Prime D. None of these
10	Question Image	A. 2 B. 7 C. 8 D. 12
11	In the expansion of $(a + x)^n$ the general term T_{r+1} is	
12	$a + x$ is _____	A. A trinomial B. A binomial C. A monomial D. None of these
13	If n is any positive integer then $n! > n^2$ for	
14	If a statement S(n) is true for $n = 1$ and the truth of S(n) for $n = k$ implies the truth of S(n) for $n = k + 1$, then S(n) is true for all	A. Real numbers n B. Integers n C. Positive integers n D. None of these
15	If n is any positive integer then $n^2 > n + 3$ for	
16	If n is any positive integer then $n! > 2^{n-1}$ for	
17	$1 + 3x + 6x^2 + 10x^3 + \dots =$	A. $(1+x)^{-3}$ B. $(1-x)^{-2}$ C. $(1-x)^{-3}$ D. $(1+x)^{-2}$

A. $(r-1)$ th term

18	The general term in the expansion of $(a+x)^n$ is	B. $(r+1)^{\text{th}}$ term C. r^{th} term D. none
19	If the sum of even coefficients in the expansion of $(1+x)^n$ is 128 then	A. $n=7$ B. $n=9$ C. $n=8$ D. None
20	The sum of first n even number is	A. n^2 B. $n(n+1)$ C. $n+1$ D. $n+2$
21	The third term in the expansion of $(1+2x)$ is	A. $-2x^2$ B. $-4x^2$ C. $2x^2$ D. $4x^2$
22	If $n \in \mathbb{Z}^+$ then $(a+x)^n$ is a/an	A. Finite series B. Convergent series C. Infinite series D. Divergent series
23	The proposition $S(k+1)$ is true when _____ is true $\forall k \in \mathbb{N}$	A. $S(n)$ B. $S(k)$ C. $S(1)$ D. $S(k-1)$
24	If $x+y+z+\dots+2n = 2n+1-1 \forall n \in \mathbb{W}$, then cube root of xyz is equal to	A. 1 B. 4 C. 2 D. 8
25	The exponent of x in 10th term in the expansion of $(a+x)^n$	A. 10 B. 12 C. 11 D. 9
26	In the expansion of $(x+y)^n$ the coefficient of 5th and 12th terms are equal then $n=$	A. 12 B. $n=14$ C. 17 D. $n=15$
27	The last term of $(1+2x)^{-2}$	A. $(-1)^{-2} (2x)^{-2}$ B. $(-1)^{-4} (-2x)^{-2}$ C. $(-1)^{-3} (2x)^{-3}$ D. Does not exist
28	The no of term is the expansion of $(a+x)^{n-1}$ is	A. $n+1$ B. $n-1$ C. n D. $n-2$
29	There are two middle terms in the expansion of $(a+x)^n$ if n is	A. Even +ve integer B. +ve integer C. Odd +ve integer D. All
30	The coefficient of x^n in the expansion of $(1-x)^{-1}$ is	A. $(-1)^n n!$ B. 1 C. $(-1)^n (n+1)$ D. $(n+1)$
31	The middle term(s) of $(a+x)^{11}$ is	A. 6th term B. 6th or 7th C. 7th term D. 6th and 7th
32	The proposition $S(n)$ for any $n \in \mathbb{N}$ is only true if $k \in \mathbb{N}$ and	A. $S(k+1)$ is true B. $S(1)$ is true and $S(k+1)$ is true whenever $S(k)$ is true C. $S(k+1)$ is true whenever $S(k)$ is true D. $S(k)$ is true
33	The coefficient of x^n in the expansion of $(1-2x)^{-1}$ is	A. $(-1)^n n!$ B. 2^n C. $(-1)^{n+1} n!$ D. $(n+1) 2^n$
34	The proposition $S(n)$ is true $\forall n \in \mathbb{N}$, $S(k+1)$ true when _____ is true	A. $S(1)$ B. Both a & c C. $S(k)$ D. None
35	There is no integer n for which $3n$ is	A. Even B. Prime C. Odd

C. 8
D. Real

36 The sum even binomial coefficient of $(3+2x)^5$ is _____ term

A. 16
B. 30
C. 8
D. 32