Mathematics ECAT Pre Engineering Chapter 10 Mathematical Inductions Online Test

Sr	Questions	Answers Choice
1	The sum even binomial coefficient of (3+2x)5 is _____term	A. 16 B. 30 C. 8 D. 32
2	There is no integer n for which 3n is	A. Even B. Prime C. Odd D. Real
3	The proposition S(n) is true∀n∈N,S(k+1) true when _____is true	A. S(1) B. Both a & c C. S(k) D. None
4	The coefficient of xn in the expansion of (1-2x)-1 is	A. (-1)n2n B. 2n C. (-1)(n+1)xr D. (n+1)2n
5	The proposition S(n) for any n∈ N is only true if k∈ 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
6	The middle term(s) of (a+x)11 is	A. 6th term B. 6thor 7th C. 7th term D. 6thand7th
7	The coefficient of xn in the expansion of (1-x)-1 is	A. (-1)n2n B. 1 C. (-1)n(n+1) D. (n+1)
8	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
9	The no of term is the expansion of (a+x)n-1 is	A. n+1 B. n-1 C. n D. n-2
10	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
11	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
12	The exponent of x in 10th term in the expansion of (a+x)n	A. 10 B. 12 C. 11 D. 9
13	If x+y+z+.....+2n = 2n+1-1∀n∈W,then cube root of xyz is equal to	A. 1 B. 4 C. 2 D. 8
14	The proposition S(k+1) is true when _____ is true∀K∈N	A. S(n) B. S(k) C. S(1) D. S(k-1)
15	If n∈Z+ then(a+x)n is a/an	A. Finite series B. Convergent series C. Infinite series

		D. Divergent series
16	The third term in the expansion of (1+2x) is	A. -2x2 B. -4x2 C. 2x2 D. 4x2
17	The sum of first n even number is	A. n2 B. n(n+1) C. n+1 D. n+2
18	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
19	The general term in the expansion of (a+x)n is	A. (r-1)th term B. (r+1)th term C. rth term D. none
20	1+3x+6x2 +10x3 +....=	A. (1+x)-3 B. (1-x)-2 C. (1-x)-3 D. (1+x)-2
21	If n is any positive integer then n! > $2^{n-1}$for	
22	If n is any positive integer then n^2> n + 3 for	
23	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 = k + 1, then S(n) is true for all	A. Real numbers n B. Integers n C. Positive integers n D. None of these
24	If n is any positive integer then n! > $n^2$for	
25	a + x is _____	A. A trinomial B. A binomial C. A monomial D. None of these
26	In the expansion of $(a + x)^n$the general term $T_{r+1}$is	
27	Question Image	A. 2 B. 7 C. 8 D. 12
28	Question Image	A. Even B. Odd C. Prime D. None of these
29	The sum of coefficients in the binomial expansion equals to	A. 2 B. 2ⁿ⁺¹ C. 2ⁿ⁻¹ D. 2ⁿ
30	The first three terms in the expansion of $(1 + x)^{-1}$are	A. 1 + x + x² B. 1 - x - x² C. -1 -x + x² D. 1 - x + x²
31	The first three terms in the expansion of $(1 + x)^{-2}$are _____	A. 1 - 2x + 3x² B. 1 - 2x - 3x² C. 1 + 2x + 3x² D. -2 -2x + 3x²
32	The first three terms in the expansion of $(1 + x)^3$are	A. 1 + 3x +6x² B. 1- 3x + 6x²\ C. -3 -3x -6x² D. 1- 3x -6x²
33	The first three terms in the expansion of $(1 - x)^{-1}$are	A. 1 + x + x² B. 1 - x - x² C. -1 -x +x² D. 1 - x + x²
34	The first three terms in the expansion of $(1 - x)^{-2}$are	A. 1 - 2x + 3x² B. 1 - 2x - 3x² C. 1 + 2x + 3x² D. -2 - 2x +3x²
35	The first three terms in the expansion of $(1 - x)^{-3}$are	A. 1 + 3x + 6x² B. 1 - 3x + 6x² C. -3 - 3x - 6x²

		C. -3 - 3x - 6x² D. 1 - 3x - 6x²
36	If the exponent in the binomial expansion is 6, then the middle term is	A. 2nd B. 3rd C. 4th D. 5th
37	The number of terms in the expansion of $(a + b)^9$is	A. 10 B. 11 C. 9 D. 12
38	In the expansion of $(a + x)^n$the sum of exponents of a and x in each term of the expansion is	A. n + 1 B. n - 1 C. n D. 2n
39	If n is odd then the middle terms in the expansion of $(a + x)^n$are	
40	The sum of even coefficient in the binomial expansion is	A. 2ⁿ⁺¹ B. 2ⁿ C. 2ⁿ⁻¹ D. 2n
41	The sum of the odd coefficients in the expansion of $(a + x)^4$is	A. 14 B. 12 C. 8 D. 4
42	The sum of the coefficient in the expansion of $(a + x)^5$is	A. 32 B. 16 C. 8 D. 5
43	The middle term in the expansion of $(a +x)^{12}$is	A. 7th B. 8th C. 9th D. 6th
44	If a statement S(n) is true for n = i where i is some natural number and the truth of S(n) for n = k > i implies the truth of S(n) for n = k +1 then S(n) is true for all positive integers	
45	If n is any positive integer then 3 + 6 + 9 + ...+ 3n = _____	
46	If n is any positive integer then $4^n>3^n+ 4$ is true for all	
47	If n is any positive integer then $2^n> 2(n + 1)$ is true for all	
48	$(1 + 2x)^4$= _____	A. 1 + 4x + 6x²+ 4x³+ x⁴ B. 1 - 4x + 6x²- 4x³+ x⁴ C. 1 - 8x + 24x²- 32x³+ 16x⁴ D. 1 + 8x+ 24x²+ 32x³+ 16x⁴
49	$(1 - x)^3$= _____	A. 1 + 3x + 3x²+ x³ B. 1 + x + x²+ x³ C. 1 - x + x²- x³ D. 1 - 3x + 3x²- x³
50	The number of terms in the expansion of $(a + x)^{12}$is	A. 13 B. 12 C. 11 D. 10
51	If the exponent in the binomial expansion is 6, then the middle term is	A. 2nd term B. 3rd term C. 4th term D. 5th term
52	The sum of the even coefficients in the expansion $(1 + x)^n$is	A. n² B. 2ⁿ⁻² C. 2ⁿ⁻¹ D. 2ⁿ
53	If n is not natural number, then the expansion $(1 + x)^n$is valid for	
54	Question Image	A. 8 B. 9 C. 10 D. 11

55	If $\|x\| < 1$, then the first two terms of $(1 - x)^{1/2}$ are	
56	The expansion of $(1 + 2x)^{-2}$ is valed if	A. | x | < 1/2 B. | x | < 1 C. | x | < 2 D. | x | < 3
57	The expansion of $(1 - 3x)^{-1}$ is valid if	A. | x | < 1 B. | x | < 3 C. | x | < 1/3 D. None of these
58	If in the expansion of $(1+x)^n$, co-efficients of 2nd, 3rd and 4th terms are in A.P., then x=	A. 4 B. 5 C. 6 D. 7
59	Question Image	A. ¹⁰C₆ B. ¹⁰C₅ C. ¹⁰C₄ D. None
60	Question Image	A. 405 / 256 B. 504 / 259 C. 450 / 263 D. None
61	Question Image	A. 28 / 81 B. 28 / 243 C. 81 / 28 D. 243 / 82
62	Question Image	A. 2 and 9 B. 3 and 2 C. 2/3 and 9 D. 3/2 and 6
63	Question Image	
64	The positive integer just greater than $(1+0.0001)^{10000}$ is	A. 4 B. 5 C. 2 D. 3
65	If the sum of co-efficient in the expansion of $(a+b)^n$ is 4096, then the greatest co-efficient in the expansion is	A. 1594 B. 792 C. 924 D. 2924
66	If the sum of co-efficient in the expansion of $(a+b)^n$ is 4096, then the greatest co-efficient in the expansion is	A. 1594 B. 792 C. 924 D. 2924
67	If the expansion of $(1 + x)^{20}$, then co-efficient of rth ad (r + 4)th term are equal, then r is	A. 7 B. 8 C. 9 D. 10
68	Digit in the unit place of the number $183! + 3^{183}$	A. 7 B. 6 C. 3 D. 0
69	The sum of co-efficient in $(1+x-3x^2)^{4163}$ is	A. 0 B. 1 C. -1 D. None
70	The greatest term in the expansion of $(3+2x)^9$, when x=1 is	A. 4th B. 4th and 5th C. 5th D. 6th
71	If the 4th term in the expansion of $(px + x^{-1})^m$ is 2.5 for all $x \in R$, then	
72	Question Image	A. ab=-1 B. ab = 1 C. ab = 2 D. None
73	If $(1+x)^n = C_0 + C_1x + C_2x^2 + \ldots\ldots + C_nx^1$ then $C_0C_2 + C_1C_3 + C_2C_4 + \ldots\ldots + C_{n-2}C_n$ =	
74	The greatest integer which divides the number $101^{100} - 1$ is	A. 100 B. 1000 C. 10000 D. 100000

		D. 100000
75	If $(1+x-2x^3)^6 = 1+a_1x + a_2x^2 + a_3x^3 + \ldots$ the the value of $a_2 + a_4 + a_6 + \ldots + a_{12}$ will be	A. 32 B. 31 C. 64 D. 1024
76	Question Image	A. ⁿC_r B. ⁿ⁺¹C_{r+1} C. ⁿC_{r+1} D. None
77	Question Image	A. 3/8 B. 7/8 C. 1/8 D. None
78	For every positive integers n 1+5+9+....+ (4n - 3) is	A. n(2n - 1) B. (2n - 1) C. n - 1 D. n
79	When we expand $(a + 2b)^5$ then	A. a⁵+ 10a⁴b + 40a³b²+ 80a²b³+ 80ab⁴+ 32b⁵ B. a⁵+ a⁴b + a³b²+ a²b³+ ab⁴+ b⁵ C. 5a⁵+ 4a⁴b + 3a³b²+ 2a²b³+ 1 ab⁴+ b⁵ D. None
80	(2.02)4 s equal to	A. 16 B. 16.6496 C. 17 D. 18
81	$7^{2n} + 3^{n-1} . 2^{3n-3}$ is divisible by	A. 24 B. 25 C. 9 D. 13
82	$(51)^4$ is equal to	A. 7065201 B. 8065201 C. 6765201 D. 6565201
83	The term involving x^4 in the expansion of $(3 - 2x)^7$ is	A. 120 B. 1512 C. 1250 D. 15120
84	$(0.90)^{1/2}$ is equal to	A. 0.99 B. 0.90 C. 0.80 D. 0.88
85	Question Image	
86	$(0.90)^{1/2}$ is equal to	A. 0.99 B. 0.90 C. 0.80 D. 0.88
87	Question Image	A. Imaginary B. Rational C. Irrational D. Real numbers
88	Number of terms in the expansion of $(a+x)^n$ is	A. n - 1 B. n + 1 C. n + 2 D. n + 3
89	Question Image	A. n < 8/5 B. n < 5/8 C. |n| < 8/5 D. |n|>8/5
90	$^nC_2$ = exists when n is _____	
		A. 1 + 2x + 3x²+

91	1st four terms of the expansion $(1-x)^{-2}$are	4x³ B. 3x²+ 2x + 1 C. 1 + 3x + 4x²+ 5x³ D. None of these
92	The expansion $(1 + x)^{-3}$holds when	A. |x| > 1 B. |x| < 1 C. x < 1 D. x > 1
93	The middle term of the expansion $(1 + 2x)^{6}$is _____	A. 1st term B. 4th term C. 2nd term D. 5th term
94	If n is add the expansion $(a + x)^{n}$has middle terms	A. 2 B. 3 C. 4 D. 5
95	There is no integer n for which 3^{n} is	A. Odd B. even C. Natural D. Prime
96	For each natural number n, n (n+1) is	A. an even B. an odd C. multiple of 3 D. Irrational
97	n(n-1)(2n-1), for all natural numbers n, is divisible by	A. 12 B. 6 C. 2 D. 18
98	The sum of the cubes of three consecutive natural number is divisible by	A. 9 B. 6 C. 5 D. 10
99	If n is any positive integer ,t hen 2+4+6+.....+2 n=	A. 2ⁿ-1 B. 2ⁿ+1 C. n²+1 D. n(n+1)
100	For each even natural number n $(n^{2}-1)$ is divisible by	A. 6 B. 3 C. 4 D. 8
101	If n € N , then n(n+3) is always	A. Multiple of 3 B. Multiple of 6 C. odd D. even
102	For n€ N,$2^{n>2}$ > n is to only when	A. n<2 B. n≤ 4 C. n≥ 4
103	For≥ -2 , 1+3+5+.....+(2n+5)	A. (n+2)² B. (n-2)² C. 2n+1 D. (n+3)²
104	If nis positive integers, then 2^{n}>2n+1, only when	A. n≤ 3 B. n≥ 3 C. n≤ 2 D. n≤ 1
105	for n€ N, $3^{2n + 7}$ is divisible by	A. 7 B. 8 C. 9 D. 10
106	n! > 2^{n}-1 is true when	A. n≤ 3 B. n≤ 6 C. n≥ 4 D. n≤ 6
107	n^{2} - 1 divisible by 8 when n is	A. an odd integer B. an even integer C. Irrational D. Prime Number
108	The middle term of $[1/x-x]^{10}$ is	A. -152 B. -252 C. 371

		D. -421
109	$(x^3-1/2x)^6$ is	A. 15/16 x² B. 2/13 x² C. 17/7 x² D. 16/15 x²
110	The coefficient of the second term of $(a+b)^4$ is	A. 1 B. 9 C. 3 D. 5
111	The middle term of $(x-y)^8$is	A. 25 x⁴y⁴ B. 70 x⁴y⁴ C. 120 x⁴y⁴ D. 97x⁴y⁴
112	The term involving x^4 in the expansion (3-2x) is	A. 217x⁴ B. 15120x⁴ C. 313x⁴ D. -25x⁴
113	(x3-1/x)12	A. 295 B. 495 C. 395 D. 722
114	The coefficient of x^{10}in the expansion $(x^3+3/x^2)^{10}$is	A. 1700 B. 17023 C. 17027 D. 17010
115	The coefficient of x^{10}in the expansion $(x^3+3/x^2)^{10}$is	A. 1700 B. 17023 C. 17027 D. 17010
116	The coefficient of the third term of $(8a-b)^{1/3}$, after simplification is	A. -228 B. 1/288 C. 1/220 D. -1/177
117	The term involving x4 the expansion (3-2x)7 is	A. 217 x4 B. 15120x4 C. 313x4 D. -25x4
118	The 8th term of $(1+2x)^{-1/2}$is	A. -221/16 x⁷ B. -225/18 x⁷ C. -407/9 x³ D. -429/16 x⁷
119	The 7th term of $(3^8 + 6^4x)^{11/4}$ is	A. -19217/3 x⁶ B. 189/2 6⁴x C. 2227/12 x³ D. -19712/3 x⁶
120	The seventh term of (x3+1/x)8is	A. 71 B. -22 C. 27 D. 28
121	The term independent of x is the expansion $(x^3+1/x)^{12}$	A. 295 B. 495 C. 395 D. 722
122	The 5th term of $(3a-2b)^{-1}$ is	A. 77b²/a⁵ B. 16b²/243 a⁵ C. 17b⁴/43a⁵ D. 25b³/43a⁵
123	The fifth term of (a+2x3)17 is	A. 4013 x3a13 B. 2208a13 x12 C. 223x7a18 D. 38080a13 x12
124	The coefficient of x^{18} in $(ax^4-bx)^9$ after expansion is	A. 84a³ b⁶ B. 22a³b⁶ C. 27a⁴b⁵ D. 28a³b⁶
125	The fifteenth term of $(3-a)^{15}$ is	A. -17a¹² B. -945a¹³ C. -941a¹³ D. -515a¹²

		D. -315a¹²
126	For all positive integral value of n,3^n< n! , when	A. n> 6 B. n< 6 C. n<11 D. n>11