

## ECAT Pre General Science Mathematics Chapter 10 Mathematical Induction 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 $3^n$ is	A. Even B. Prime C. Odd D. Real
3	The proposition $S(n)$ is true $\forall n \in N$ , $S(k+1)$ true when _____ is true	A. $S(1)$ B. Both a & c C. $S(k)$ D. None
4	The coefficient of $x^n$ in the expansion of $(1-2x)^{-1}$ is	A. $(-1)^n 2^n$ B. 2^n C. $(-1)(n+1)x^n$ D. $(n+1)2^n$
5	The proposition $S(n)$ for any $n \in N$ is only true if $k \in N$ 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. 6th or 7th C. 7th term D. 6th and 7th
7	The coefficient of $x^n$ in the expansion of $(1-x)^{-1}$ is	A. $(-1)^n 2^n$ 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 in 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 $x+y+z+\dots+2n = 2n+1-1 \forall n \in W$ , 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 $\forall k \in N$	A. $S(n)$ B. $S(k)$ C. $S(1)$ D. $S(k-1)$
15	If $n \in Z^+$ then $(a+x)^n$ is a/an	A. Finite series B. Convergent series C. Infinite series

- 16 The third term in the expansion of  $(1+2x)$  is  
 A. -2x<sup>2</sup>  
 B. -4x<sup>2</sup>  
 C. 2x<sup>2</sup>  
 D. 4x<sup>2</sup>
- 17 The sum of first n even number is  
 A. n<sup>2</sup>  
 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  $1+3x+6x^2+10x^3+\dots=$   
 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  
 A. Real numbers n  
 B. Integers n  
 C. Positive integers n  
 D. None of these
- 22 If n is any positive integer then  $n^2 > n + 3$  for  
 A. A trinomial  
 B. A binomial  
 C. A monomial  
 D. None of these
- 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 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
- 24 If n is any positive integer then  $n! > n^2$  for  
 A. 2  
 B. 7  
 C. 8  
 D. 12
- 25 a + x is \_\_\_\_\_  
 A. Even  
 B. Odd  
 C. Prime  
 D. None of these
- 26 In the expansion of  $(a + x)^n$  the general term  $T_{r+1}$  is  
 A. 2  
 B. 2<sup>n+1</sup>  
 C. 2<sup>n-1</sup>  
 D. 2<sup>n</sup>
- 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.  $2^{n+1}$   
 C.  $2^{n-1}$   
 D.  $2^n$
- 30 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.  $1 - x + x^2$
- 31 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.  $-2 - 2x + 3x^2$
- 32 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.  $1 - 3x - 6x^2$
- 33 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.  $1 - x + x^2$
- 34 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.  $-2 - 2x + 3x^2$
- 35 The first three terms in the expansion of  $(1 - x)^{-3}$  are  
 A.  $1 + 3x + 6x^2$   
 B.  $1 - 3x + 6x^2$   
 C.  $-3 - 3x - 6x^2$

- 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  
A.  $2^{n+1}$   
B.  $2^n$   
**C.  $2^{n-1}$**   
D.  $2n$
- 40 The sum of even coefficient in the binomial expansion is  
A. 14  
B. 12  
**C. 8**  
D. 4
- 41 The sum of the odd coefficients in the expansion of  $(a + x)^4$  is  
A. 32  
B. 16  
C. 8  
D. 5
- 42 The sum of the coefficient in the expansion of  $(a + x)^5$  is  
A. 7th  
B. 8th  
C. 9th  
D. 6th
- 43 The middle term in the expansion of  $(a + x)^{12}$  is  
A.  $1 + 4x + 6x^2 + 4x^3 + x^4$   
B.  $1 - 4x + 6x^2 - 4x^3 + x^4$   
C.  $1 - 8x + 24x^2 - 32x^3 + 16x^4$   
D.  $1 + 8x + 24x^2 + 32x^3 + 16x^4$
- 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  $3 + 6 + 9 + \dots + 3n = \underline{\hspace{2cm}}$
- 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  $(1 + 2x)^4 = \underline{\hspace{2cm}}$   
A.  $1 + 4x + 6x^2 + 4x^3 + x^4$   
B.  $1 - 4x + 6x^2 - 4x^3 + x^4$   
C.  $1 - 8x + 24x^2 - 32x^3 + 16x^4$   
D.  $1 + 8x + 24x^2 + 32x^3 + 16x^4$
- 49  $(1 - x)^3 = \underline{\hspace{2cm}}$   
A.  $1 + 3x + 3x^2 + x^3$   
B.  $1 - x + x^2 - x^3$   
C.  $1 - x + x^2 + x^3$   
D.  $1 - 3x + 3x^2 - x^3$
- 50 The number of terms in the expansion of  $(a + x)^{12}$  is  
A. 2nd term  
B. 3rd term  
**C. 4th term**  
D. 5th term
- 51 If the exponent in the binomial expansion is 6, then the middle term is  
A.  $n^2$   
B.  $2^{n-2}$   
**C.  $2^{n-1}$**   
D.  $2^n$
- 52 If  $n$  is not natural number, then the expansion  $(1 + x)^n$  is valid for  
A. 8  
B. 9  
**C. 10**  
D. 11
- 54 Question Image

- 55 If  $|x| < 1$ , then the first two terms of  $(1 - x)^{1/2}$  are  
A.  $|x| < 1/2$   
B.  $|x| < 1$   
C.  $|x| < 2$   
D.  $|x| < 3$
- 56 The expansion of  $(1 + 2x)^{-2}$  is valid if  
A.  $|x| < 1$   
B.  $|x| < 3$   
C.  $|x| < 1/3$   
D. None of these
- 57 The expansion of  $(1 - 3x)^{-1}$  is valid if  
A. 4  
B. 5  
C. 6  
D. 7
- 58 If in the expansion of  $(1+x)^n$ , co-efficients of 2nd, 3rd and 4th terms are in A.P., then  $x =$   
A.  $<sup>10</sup>C<sub>6</sub>$   
B.  $<sup>10</sup>C<sub>5</sub>$   
C.  $<sup>10</sup>C<sub>4</sub>$   
D. None
- 59 Question Image  
A. 405 / 256  
B. 504 / 259  
C. 450 / 263  
D. None
- 60 Question Image  
A. 28 / 81  
B. 28 / 243  
C. 81 / 28  
D. 243 / 82
- 61 Question Image  
A. 2 and 9  
B. 3 and 2  
C. 2/3 and 9  
D. 3/2 and 6
- 62 Question Image  
A. 4  
B. 5  
C. 2  
D. 3
- 63 Question Image  
A. 1594  
B. 792  
C. 924  
D. 2924
- 64 The positive integer just greater than  $(1+0.0001)^{10000}$  is  
A. 1594  
B. 792  
C. 924  
D. 2924
- 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. 7  
B. 8  
C. 9  
D. 10
- 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. 7  
B. 6  
C. 3  
D. 0
- 67 If the expansion of  $(1 + x)^{20}$ , then co-efficient of rth and  $(r + 4)$ th term are equal, then r is  
A. 0  
B. 1  
C. -1  
D. None
- 68 Digit in the unit place of the number  $183! + 3^{183}$   
A. 4th  
B. 4th and 5th  
C. 5th  
D. 6th
- 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. ab=-1  
B. ab = 1  
C. ab = 2  
D. None
- 71 If the 4th term in the expansion of  $(px + x^{-1})^m$  is 2.5 for all  $x \in R$ , then  
A.  $ab=-1$   
B.  $ab = 1$   
C.  $ab = 2$   
D. None
- 72 Question Image  
If  $(1+x)^n = C_0 + C_1x + C_2x^2 + \dots + C_n x^n$  then  $C_0 C_2 + C_1 C_3 + C_2 C_4 + \dots + C_{n-2} C_n =$   
A. 100  
B. 1000  
C. 10000  
D. 100000
- 73 The greatest integer which divides the number  $101^{100} - 1$  is

- 75 If  $(1+x-2x^3)^6 = 1+a_1x + a_2x^2 + a_3x^3 + \dots$  the value of  $a_2 + a_4 + a_6 + \dots + a_{12}$  will be  
 A. 32  
 B. 31  
 C. 64  
 D. 1024
- 76 Question Image  
 A.  $\frac{n}{n+1}C_r$   
 B.  $\frac{n+1}{n}C_{r+1}$   
 C.  $\frac{n}{n+1}C_{r+1}$   
 D. None
- 77 Question Image  
 A.  $\frac{3}{8}$   
 B.  $\frac{7}{8}$   
 C.  $\frac{1}{8}$   
 D. None
- 78 For every positive integers n  $1+5+9+\dots+(4n-3)$  is  
 A.  $n(2n-1)$   
 B.  $(2n-1)$   
 C.  $n-1$   
 D.  $n$
- 79 When we expand  $(a+2b)^5$  then  
 A.  $a^5 + 10a^4b + 40a^3b^2 + 80a^2b^3 + 80ab^4 + 32b^5$   
 B.  $a^5 + a^4b + a^3b^2 + a^2b^3 + ab^4 + b^5$   
 C.  $5a^5 + 4a^4b + 3a^3b^2 + 2a^2b^3 + ab^4 + b^5$   
 D. None
- 80  $(2.02)^4$  is equal to  
 A. 16  
 B. 16.6496  
 C. 17  
 D. 18
- 81  $7^{2n} + 3^{n-1} \cdot 2^{3n-3}$  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  
 A. 0.99  
 B. 0.90  
 C. 0.80  
 D. 0.88
- 86  $(0.90)^{1/2}$  is equal to  
 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.  $1 + 2x + 3x^2 + \dots$

- 91 1st four terms of the expansion  $(1-x)^{-2}$  are  
A.  $4x^3$   
B.  $3x^2 + 2x + 1$   
C.  $1 + 3x + 4x^2 + 5x^3$   
D. None of these
- 92 The expansion  $(1+x)^3$  holds when  
A.  $|x| > 1$   
B.  $|x| < 1$   
C.  $x &lt; 1$   
D.  $x &gt; 1$
- 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 odd 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 numbers is divisible by  
A. 9  
B. 6  
C. 5  
D. 10
- 99 If  $n$  is any positive integer, then  $2+4+6+\dots+2n =$   
A.  $2^{n-1}$   
B.  $2^{n+1}$   
C.  $2^{n+2}+1$   
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  $n \in \mathbb{N}$ , then  $n(n+3)$  is always  
A. Multiple of 3  
B. Multiple of 6  
C. odd  
D. even
- 102 For  $n \in \mathbb{N}$ ,  $2^{n-2} > n$  is true when  
A.  $n < 2$   
B.  $n \leq 4$   
C.  $n \geq 4$
- 103 For  $n \geq -2$ ,  $1+3+5+\dots+(2n+5)$   
A.  $(n+2)^2$   
B.  $(n-2)^2$   
C.  $2n+1$   
D.  $(n+3)^2$
- 104 If  $n$  is a positive integer, then  $2^n > 2n+1$ , only when  
A.  $n \leq 3$   
B.  $n \geq 3$   
C.  $n \leq 2$   
D.  $n \leq 1$
- 105 For  $n \in \mathbb{N}$ ,  $3^{2n+7}$  is divisible by  
A. 7  
B. 8  
C. 9  
D. 10
- 106  $n! > 2^{n-1}$  is true when  
A.  $n \leq 3$   
B.  $n \leq 6$   
C.  $n \geq 4$   
D.  $n \leq 6$
- 107  $n^2 - 1$  is 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

- 109  $(x^3 - 1/2x)^6$  is  
 A.  $15/16 x^{12}$   
 B.  $2/13 x^{12}$   
 C.  $17/7 x^{12}$   
 D.  $16/15 x^{12}$
- 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.  $25 x^4 y^4$   
 B.  $70 x^4 y^4$   
 C.  $120 x^4 y^4$   
 D.  $97 x^4 y^4$
- 112 The term involving  $x^4$  in the expansion  $(3-2x)$  is  
 A.  $217x^4$   
 B.  $15120x^4$   
 C.  $313x^4$   
 D.  $-25x^4$
- 113  $(x^3 - 1/x)^{12}$   
 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  $x^4$  in the expansion  $(3-2x)^7$  is  
 A.  $217 x^4$   
 B.  $15120 x^4$   
 C.  $313 x^4$   
 D.  $-25 x^4$
- 118 The 8th term of  $(1+2x)^{-1/2}$  is  
 A.  $-221/16 x^7$   
 B.  $-225/18 x^7$   
 C.  $-407/9 x^7$   
 D.  $-429/16 x^7$
- 119 The 7th term of  $(3^8 + 6^4 x)^{11/4}$  is  
 A.  $-19217/3 x^6$   
 B.  $189/2 x^6$   
 C.  $2227/12 x^6$   
 D.  $-19712/3 x^6$
- 120 The seventh term of  $(x^3 + 1/x)^8$  is  
 A. 71  
 B. -22  
 C. 27  
 D. 28
- 121 The term independent of  $x$  in 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.  $77b^2/a^5$   
 B.  $16b^2/a^5$   
 C.  $17b^4/43a^5$   
 D.  $25b^3/43a^5$
- 123 The fifth term of  $(a+2x)^{17}$  is  
 A.  $4013 x^3 a^{13}$   
 B.  $2208 a^{13} x^{12}$   
 C.  $223 x^7 a^{18}$   
 D.  $38080 a^{13} x^{12}$
- 124 The coefficient of  $x^{18}$  in  $(ax^4 - bx)^9$  after expansion is  
 A.  $84a^3 b^6$   
 B.  $22a^3 b^6$   
 C.  $27a^3 b^5$   
 D.  $28a^3 b^6$
- 125 The fifteenth term of  $(3-a)^{15}$  is  
 A.  $-17a^{12}$   
 B.  $-945a^{13}$   
 C.  $-941a^{13}$   
 D.  $-515a^{12}$

- 126 For all positive integral value of  $n$ ,  $3^n < n!$ , when  
 A.  $n > 6$   
 B.  $n < 6$   
 C.  $n < 11$   
 D.  $n > 11$
- 127 The sum even binomial coefficient of  $(3+2x)^5$  is \_\_\_\_\_ term  
 A. 16  
 B. 30  
 C. 8  
 D. 32
- 128 There is no integer  $n$  for which  $3^n$  is  
 A. Even  
 B. Prime  
 C. Odd  
 D. Real
- 129 The proposition  $S(n)$  is true  $\forall n \in N$ ,  $S(k+1)$  true when \_\_\_\_\_ is true  
 A.  $S(1)$   
 B. Both a & c  
 C.  $S(k)$   
 D. None
- 130 The coefficient of  $x^n$  in the expansion of  $(1-2x)^{-1}$  is  
 A.  $(-1)^n 2^n$   
 B.  $2^n$   
 C.  $(-1)(n+1)x^n$   
 D.  $(n+1)2^n$
- 131 The proposition  $S(n)$  for any  $n \in N$  is only true if  $k \in N$  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
- 132 The middle term(s) of  $(a+x)^{11}$  is  
 A. 6th term  
 B. 6th or 7th  
 C. 7th term  
 D. 6th and 7th
- 133 The coefficient of  $x^n$  in the expansion of  $(1-x)^{-1}$  is  
 A.  $(-1)^n 2^n$   
 B. 1  
 C.  $(-1)^n (n+1)$   
 D.  $(n+1)$
- 134 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
- 135 The no of term in the expansion of  $(a+x)^{n-1}$  is  
 A.  $n+1$   
 B.  $n-1$   
 C.  $n$   
 D.  $n-2$
- 136 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
- 137 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.  $n=15$
- 138 The exponent of  $x$  in 10th term in the expansion of  $(a+x)^n$   
 A. 10  
 B. 12  
 C. 11  
 D. 9
- 139 If  $x+y+z+\dots+2n = 2n+1-1 \forall n \in W$ , then cube root of  $xyz$  is equal to  
 A. 1  
 B. 4  
 C. 2  
 D. 8
- 140 The proposition  $S(k+1)$  is true when \_\_\_\_\_ is true  $\forall k \in N$   
 A.  $S(n)$   
 B.  $S(k)$   
 C.  $S(1)$   
 D.  $S(k-1)$
- 141 If  $n \in Z^+$  then  $(a+x)^n$  is a/an  
 A. Finite series  
 B. Convergent series  
 C. Infinite series  
 D. Divergent series
- 142 The third term in the expansion of  $(1+2x)^{-3}$  is  
 A.  $-2x^2$   
 B.  $-4x^2$   
 C.  $2x^2$   
 D.  $4x^2$

143	The sum of first n even number is	A. $n^2$ B. $n(n+1)$ C. $n+1$ D. $n+2$
144	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
145	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
146	$1+3x+6x^2+10x^3+\dots=$	A. $(1+x)^3$ B. $(1-x)^2$ C. $(1-x)^3$ D. $(1+x)^2$
147	If n is any positive integer then $n! > 2^{n-1}$ for	
148	If n is any positive integer then $n^2 > n + 3$ for	
149	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
150	If n is any positive integer then $n! > n^2$ for	
151	$a + x$ is _____	A. A trinomial B. A binomial C. A monomial D. None of these
152	In the expansion of $(a + x)^n$ the general term $T_{r+1}$ is	
153	Question Image	A. 2 B. 7 C. 8 D. 12
154	Question Image	A. Even B. Odd C. Prime D. None of these
155	The sum of coefficients in the binomial expansion equals to	A. 2 B. $2^{n+1}$ C. $2^{n-1}$ D. $2^n$
156	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. $1 - x + x^2$
157	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. $-2 - 2x + 3x^2$
158	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. $1 - 3x - 6x^2$
159	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. $1 - x + x^2$
160	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. $-2 - 2x + 3x^2$
161	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. $1 - 3x - 6x^2$
162	If the exponent in the binomial expansion is 6, then the middle term is	A. 2nd B. 3rd C. 4th D. 5th

- 163 The number of terms in the expansion of  $(a + b)^9$  is  
A. 10  
B. 11  
C. 9  
D. 12
- 164 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.  $2n$
- 165 If  $n$  is odd then the middle terms in the expansion of  $(a + x)^n$  are  
A.  $2^{n+1}$   
B.  $2^n$   
C.  $2^{n-1}$   
D.  $2n$
- 166 The sum of even coefficient in the binomial expansion is  
A. 14  
B. 12  
C. 8  
D. 4
- 167 The sum of the odd coefficients in the expansion of  $(a + x)^4$  is  
A. 32  
B. 16  
C. 8  
D. 5
- 168 The middle term in the expansion of  $(a + x)^{12}$  is  
A. 7th  
B. 8th  
C. 9th  
D. 6th
- 170 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
- 171 If  $n$  is any positive integer then  $3 + 6 + 9 + \dots + 3n = \underline{\hspace{2cm}}$
- 172 If  $n$  is any positive integer then  $4^n > 3^n + 4$  is true for all
- 173 If  $n$  is any positive integer then  $2^n > 2(n + 1)$  is true for all  
A.  $1 + 4x + 6x^2 + 4x^3 + x^4$   
B.  $1 - 4x + 6x^2 - 4x^3 + x^4$   
C.  $1 - 8x + 24x^2 - 32x^3 + 16x^4$   
D.  $1 + 8x + 24x^2 + 32x^3 + 16x^4$
- 174  $(1 + 2x)^4 = \underline{\hspace{2cm}}$   
A.  $1 + 3x + 3x^2 + x^3$   
B.  $1 + x + x^2 + x^3$   
C.  $1 - x + x^2 - x^3$   
D.  $1 - 3x + 3x^2 + x^3$
- 175  $(1 - x)^3 = \underline{\hspace{2cm}}$   
A. 13  
B. 12  
C. 11  
D. 10
- 176 The number of terms in the expansion of  $(a + x)^{12}$  is  
A. 2nd term  
B. 3rd term  
C. 4th term  
D. 5th term
- 177 If the exponent in the binomial expansion is 6, then the middle term is  
A.  $n^2$   
B.  $2^{n-2}$   
C.  $2^{n-1}$   
D.  $2^n$
- 178 The sum of the even coefficients in the expansion  $(1 + x)^n$  is  
A.  $|x| < 1/2$   
B.  $|x| < 1$   
C.  $|x| < 2$
- 179 If  $n$  is not natural number, then the expansion  $(1 + x)^n$  is valid for  
A. 8  
B. 9  
C. 10  
D. 11
- 180 Question Image
- 181 If  $|x| < 1$ , then the first two terms of  $(1 - x)^{1/2}$  are  
A.  $|x| < 1/2$   
B.  $|x| < 1$   
C.  $|x| < 2$
- 182 The expansion of  $(1 + 2x)^{-2}$  is valid if  
A.  $|x| < 1/2$   
B.  $|x| < 1$   
C.  $|x| < 2$

		D. $ x  < 3$
183	The expansion of $(1 - 3x)^{-1}$ is valid if	A. $ x  < 1$ B. $ x  < 3$ <b>C. <math> x  &lt; 1/3</math></b> D. None of these
184	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 <b>D. 7</b>
185	Question Image	A. $<sup>10</sup>C<sub>6</sub>$ B. $<sup>10</sup>C<sub>5</sub>$ C. $<sup>10</sup>C<sub>4</sub>$ D. None
186	Question Image	<b>A. 405 / 256</b> B. 504 / 259 C. 450 / 263 D. None
187	Question Image	A. 28 / 81 <b>B. 28 / 243</b> C. 81 / 28 D. 243 / 82
188	Question Image	A. 2 and 9 B. 3 and 2 <b>C. 2/3 and 9</b> D. 3/2 and 6
189	Question Image	
190	The positive integer just greater than $(1+0.0001)^{10000}$ is	A. 4 B. 5 C. 2 <b>D. 3</b>
191	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 <b>C. 924</b> D. 2924
192	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 <b>C. 924</b> D. 2924
193	If the expansion of $(1 + x)^{20}$ , then co-efficient of rth and $(r + 4)$ th term are equal, then r is	A. 7 B. 8 <b>C. 9</b> D. 10
194	Digit in the unit place of the number $183! + 3^{183}$	<b>A. 7</b> B. 6 C. 3 D. 0
195	The sum of co-efficient in $(1+x-3x^2)^{4163}$ is	A. 0 B. 1 <b>C. -1</b> D. None
196	The greatest term in the expansion of $(3+2x)^9$ , when $x=1$ is	A. 4th <b>B. 4th and 5th</b> C. 5th D. 6th
197	If the 4th term in the expansion of $(px + x^{-1})^m$ is 2.5 for all $x \in R$ , then	
198	Question Image	A. $ab=-1$ <b>B. <math>ab = 1</math></b> C. $ab = 2$ D. None
199	If $(1+x)^n = C_0 + C_1x + C_2x^2 + \dots + C_nx^n$ then $C_0C_2 + C_1C_3 + C_2C_4 + \dots + C_{n-2}C_n =$	
200	The greatest integer which divides the number $101^{100}-1$ is	A. 100 B. 1000 <b>C. 10000</b> D. 100000
201	If $(1+x-2x^3)^6 = 1+a_1x + a_2x^2 + a_3x^3 + \dots$ the value of $a_2 + a_4 + a_6 + \dots + a_{12}$ will be	A. 32 <b>B. 31</b> C. 64 D. 1024

202	Question Image	A. $n^{n-1}C_r$ B. $n+1^{n-1}C_r$ C. $n^{n-1}C_{r+1}$ D. None
203	Question Image	A. 3/8 B. 7/8 C. 1/8 D. None
204	For every positive integers n $1+5+9+\dots+(4n-3)$ is	A. $n(2n-1)$ B. $(2n-1)$ C. $n-1$ D. n
205	When we expand $(a+2b)^5$ then	A. $a^5 + 10a^4b + 40a^3b^2 + 80a^2b^3 + 80ab^4 + 32b^5$ B. $a^5 + a^4b + a^3b^2 + a^2b^3 + ab^4 + b^5$ C. $5a^5 + 4a^4b + 3a^3b^2 + 2a^2b^3 + ab^4 + b^5$ D. None
206	$(2.02)^4$ is equal to	A. 16 B. 16.6496 C. 17 D. 18
207	$7^{2n+3^{n-1}} \cdot 2^{3n-3}$ is divisible by	A. 24 B. 25 C. 9 D. 13
208	$(51)^4$ is equal to	A. 7065201 B. 8065201 C. 6765201 D. 6565201
209	The term involving $x^4$ in the expansion of $(3-2x)^7$ is	A. 120 B. 1512 C. 1250 D. 15120
210	$(0.90)^{1/2}$ is equal to	A. 0.99 B. 0.90 C. 0.80 D. 0.88
211	Question Image	A. 0.99 B. 0.90 C. 0.80 D. 0.88
212	$(0.90)^{1/2}$ is equal to	A. Imaginary B. Rational C. Irrational D. Real numbers
213	Question Image	A. $n-1$ B. $n+1$ C. $n+2$ D. $n+3$
214	Number of terms in the expansion of $(a+x)^n$ is	A. $n < 8/5$ B. $n < 5/8$ C. $ n  < 8/5$ D. $ n  > 8/5$
215	Question Image	A. $nC_2$ exists when n is _____
216	$nC_2$ exists when n is _____	A. $1 + 2x + 3x^2 + 4x^3$ B. $3x^2 + 2x + 2x + 1$ C. $1 + 3x + 4x^2 + 5x^3$ D. None of these
217	1st four terms of the expansion $(1-x)^{-2}$ are	A. $\Delta$ lvl 8nt 1

- 218 The expansion  $(1 + x)^3$  holds when  
 A.  $|x| < 1$   
 C.  $x < 1$   
 D.  $x > 1$
- 
- 219 The middle term of the expansion  $(1 + 2x)^6$  is \_\_\_\_\_  
 A. 1st term  
 B. 4th term  
 C. 2nd term  
 D. 5th term
- 
- 220 If  $n$  is odd the expansion  $(a + x)^n$  has middle terms  
 A. 2  
 B. 3  
 C. 4  
 D. 5
- 
- 221 There is no integer  $n$  for which  $3^n$  is  
 A. Odd  
 B. even  
 C. Natural  
 D. Prime
- 
- 222 For each natural number  $n$ ,  $n(n+1)$  is  
 A. an even  
 B. an odd  
 C. multiple of 3  
 D. Irrational
- 
- 223  $n(n-1)(2n-1)$ , for all natural numbers  $n$ , is divisible by  
 A. 12  
 B. 6  
 C. 2  
 D. 18
- 
- 224 The sum of the cubes of three consecutive natural numbers is divisible by  
 A. 9  
 B. 6  
 C. 5  
 D. 10
- 
- 225 If  $n$  is any positive integer, then  $2+4+6+\dots+2n=$   
 A.  $2^{n-1}$   
 B.  $2^{n+1}$   
 C.  $n^{2+1}$   
 D.  $n(n+1)$
- 
- 226 For each even natural number  $n$ ,  $(n^2-1)$  is divisible by  
 A. 6  
 B. 3  
 C. 4  
 D. 8
- 
- 227 If  $n \in \mathbb{N}$ , then  $n(n+3)$  is always  
 A. Multiple of 3  
 B. Multiple of 6  
 C. odd  
 D. even
- 
- 228 For  $n \in \mathbb{N}$ ,  $2^n > n$  is true when  
 A.  $n < 2$   
 B.  $n \leq 4$   
 C.  $n \geq 4$
- 
- 229 For  $n \in \mathbb{N}$ ,  $1+3+5+\dots+(2n+5)$   
 A.  $(n+2)^2$   
 B.  $(n-2)^2$   
 C.  $2n+1$   
 D.  $(n+3)^2$
- 
- 230 If  $n$  is a positive integer, then  $2^n > 2n+1$ , only when  
 A.  $n \leq 3$   
 B.  $n \geq 3$   
 C.  $n \leq 2$   
 D.  $n \leq 1$
- 
- 231 For  $n \in \mathbb{N}$ ,  $3^{2n+7}$  is divisible by  
 A. 7  
 B. 8  
 C. 9  
 D. 10
- 
- 232  $n! > 2^n - 1$  is true when  
 A.  $n \leq 3$   
 B.  $n \leq 6$   
 C.  $n \geq 4$   
 D.  $n \leq 6$
- 
- 233  $n^2 - 1$  divisible by 8 when  $n$  is  
 A. an odd integer  
 B. an even integer  
 C. Irrational  
 D. Prime Number
- 
- 234 The middle term of  $[1/x-x]^10$  is  
 A. -152  
 B. -252  
 C. 371  
 D. -421
- 
- 235  $(x^3-1/2x)^6$  is  
 A.  $15/16 x^2$   
 B.  $2/13 x^2$   
 C.  $17/7 x^2$   
 D.  $16/15 x^2$

- 236 The coefficient of the second term of  $(a+b)^4$  is  
 A. 9  
 B. 3  
 C. 5
- 
- 237 The middle term of  $(x-y)^8$  is  
 A.  $25x^4y^4$   
 B.  $70x^4y^4$   
 C.  $120x^4y^4$   
 D.  $97x^4y^4$
- 
- 238 The term involving  $x^4$  in the expansion  $(3-2x)$  is  
 A.  $217x^4$   
 B.  $15120x^4$   
 C.  $313x^4$   
 D.  $-25x^4$
- 
- 239  $(x^3-1/x)12$   
 A. 295  
 B. 495  
 C. 395  
 D. 722
- 
- 240 The coefficient of  $x^{10}$  in the expansion  $(x^3+3/x^2)^{10}$  is  
 A. 1700  
 B. 17023  
 C. 17027  
 D. 17010
- 
- 241 The coefficient of  $x^{10}$  in the expansion  $(x^3+3/x^2)^{10}$  is  
 A. 1700  
 B. 17023  
 C. 17027  
 D. 17010
- 
- 242 The coefficient of the third term of  $(8a-b)^{1/3}$ , after simplification is  
 A. -228  
 B.  $1/288$   
 C.  $1/220$   
 D.  $-1/177$
- 
- 243 The term involving  $x^4$  in the expansion  $(3-2x)^7$  is  
 A.  $217x^4$   
 B.  $15120x^4$   
 C.  $313x^4$   
 D.  $-25x^4$
- 
- 244 The 8th term of  $(1+2x)^{-1/2}$  is  
 A.  $-221/16x^7$   
 B.  $-225/18x^7$   
 C.  $-407/9x^3$   
 D.  $-429/16x^7$
- 
- 245 The 7th term of  $(3^8 + 6^4x)^{11/4}$  is  
 A.  $-19217/3x^6$   
 B.  $189/26^4x^4$   
 C.  $2227/12x^3$   
 D.  $-19712/3x^6$
- 
- 246 The seventh term of  $(x^3+1/x)^8$  is  
 A. 71  
 B. -22  
 C. 27  
 D. 28
- 
- 247 The term independent of  $x$  in the expansion  $(x^3+1/x)^{12}$   
 A. 295  
 B. 495  
 C. 395  
 D. 722
- 
- 248 The 5th term of  $(3a-2b)^{-1}$  is  
 A.  $77b^2/a^5$   
 B.  $16b^2/243a^5$   
 C.  $17b^4/43a^5$   
 D.  $25b^3/43a^5$
- 
- 249 The fifth term of  $(a+2x)^{17}$  is  
 A.  $4013x^3a^{13}$   
 B.  $2208a^{13}x^{12}$   
 C.  $223x^7a^{18}$   
 D.  $38080a^{13}x^{12}$
- 
- 250 The coefficient of  $x^{18}$  in  $(ax^4-bx)^9$  after expansion is  
 A.  $84a^3b^6$   
 B.  $22a^3b^6$   
 C.  $27a^4b^5$   
 D.  $28a^3b^6$
- 
- 251 The fifteenth term of  $(3-a)^{15}$  is  
 A.  $-17a^{12}$   
 B.  $-945a^{13}$   
 C.  $-941a^{13}$   
 D.  $-515a^{12}$
- 
- 252 For all positive integral value of  $n$ ,  $3^n < n!$ , when  
 A.  $n > 6$   
 B.  $n < 6$   
 C.  $n < 11$   
 D.  $n > 11$