

## ECAT Pre General Science Mathematics Online Test

| Sr | Questions   | Answers Choice   |
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| 1  | $1+3x+6x^2+10x^3+\dots=$  | A. $(1+x)^{-3}$<br>B. $(1-x)^{-2}$<br>C. $(1-x)^{-3}$<br>D. $(1+x)^{-2}$                               |
| 2  | The general term in the expansion of $(a+x)^n$ is   | A. $(r-1)$ th term<br>B. $(r+1)$ th term<br>C. $r$ th term<br>D. none                                  |
| 3  | If the sum of even coefficients in the expansion of $(1+x)^n$ is 128 then                   | A. $n=7$<br>B. $n=9$<br>C. $n=8$<br>D. None  |
| 4  | The sum of first $n$ even number is   | A. $n^2$<br>B. $n(n+1)$<br>C. $n+1$<br>D. $n+2$  |
| 5  | The third term in the expansion of $(1+2x)$ is  | A. $-2x^2$<br>B. $-4x^2$<br>C. $2x^2$<br>D. $4x^2$   |
| 6  | If $n \in \mathbb{Z}^+$ then $(a+x)^n$ is $a/an$  | A. Finite series<br>B. Convergent series<br>C. Infinite series<br>D. Divergent series                  |
| 7  | The proposition $S(k+1)$ is true when _____ is true $\forall K \in \mathbb{N}$              | A. $S(n)$<br>B. $S(k)$<br>C. $S(1)$<br>D. $S(k-1)$   |
| 8  | If $x+y+z+\dots+2n = 2n+1-1 \forall n \in \mathbb{W}$ , then cube root of $xyz$ is equal to | A. 1<br>B. 4<br>C. 2<br>D. 8   |
| 9  | The exponent of $x$ in 10th term in the expansion of $(a+x)^n$                              | A. 10<br>B. 12<br>C. 11<br>D. 9  |
| 10 | In the expansion of $(x+y)^n$ the coefficient of 5th and 12th terms are equal then $n=$     | A. 12<br>B. $n=14$<br>C. 17<br>D. $n=15$   |
| 11 | The last term of $(1+2x)^{-2}$  | A. $(-1)^{-2} (2x)^{-2}$<br>B. $(-1)^{-4} (-2x)^{-2}$<br>C. $(-1)^{-3} (2x)^{-3}$<br>D. Does not exist |
| 12 | The no of term is the expansion of $(a+x)^{n-1}$ is   | A. $n+1$<br>B. $n-1$<br>C. $n$<br>D. $n-2$   |
| 13 | There are two middle terms in the expansion of $(a+x)^n$ if $n$ is                          | A. Even +ve integer<br>B. +ve integer<br>C. Odd +ve integer<br>D. All                                  |
| 14 | The coefficient of $x^n$ in the expansion of $(1-x)^{-1}$ is                                | A. $(-1)^{n2n}$<br>B. 1<br>C. $(-1)^{n(n+1)}$<br>D. $(n+1)$  |
| 15 | The middle term(s) of $(a+x)^{11}$ is   | A. 6th term<br>B. 6th or 7th<br>C. 7th term<br>D. 6th and 7th  |

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| 16 | 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<br>B. $S(1)$ is true and $S(k+1)$ is true whenever $S(k)$ is true<br>C. $S(k+1)$ is true whenever $S(k)$ is true<br>D. $S(k)$ is true   |
| 17 | For any positive integer $n$  | A. $AB^n = B^n A \Leftrightarrow AB = BA$<br>B. $AB^n = B^n A \Leftrightarrow A, B$ are square matrices and $AB = BA$<br>C. $AB^n = B^n A \Leftrightarrow A + B$<br>D. $AB^n = B^n A \Leftrightarrow A$ and $B$ are square matrices |
| 18 | The coefficient of $x^n$ in the expansion of $(1-2x)^{-1}$ is   | A. $(-1)^n 2^n$<br>B. $2^n$<br>C. $(-1)^{(n+1)} x^n$<br>D. $(n+1) 2^n$  |
| 19 | The proposition $S(n)$ is true $\forall n \in \mathbb{N}$ , $S(k+1)$ true when _____ is true  | A. $S(1)$<br>B. Both a & c<br>C. $S(k)$<br>D. None  |
| 20 | There is no integer $n$ for which $3n$ is   | A. Even<br>B. Prime<br>C. Odd<br>D. Real  |
| 21 | The sum even binomial coefficient of $(3+2x)^5$ is _____ term   | A. 16<br>B. 30<br>C. 8<br>D. 32   |
| 22 | Which one is not defined $\forall n \in \mathbb{Z}^+$   | A. $-n!$<br>B. $n!$<br>C. $(-n)!$<br>D. $n! + 0! = n! + 1$  |
| 23 | Number of combination of zero or more things out of $n$ different things  | A. $nP_n$<br>B. $nPr$<br>C. $nCr$<br>D. $2^n$   |
| 24 | How many committees of 5 numbers can be chosen from a group of 8 players person when each committee must include 2 particular persons | A. 8!<br>B. $5!3!$<br>C. 5!<br>D. 20  |
| 25 | How many 6-Digit number can be formed without repeating any digit from the digits 0,1,2,3,4,5   | A. 720<br>B. 600<br>C. 120<br>D. $6-5!$   |
| 26 | Probability of an impossible event is   | A. 0<br>B. -1<br>C. 1<br>D. $\infty$  |
| 27 | A key ring is an example of   | A. Permutation<br>B. Circular permutation<br>C. Combination<br>D. None  |
| 28 | The factorial of a positive integers is a (an)  | A. Rational number<br>B. Positive integer<br>C. Real number<br>D. None  |
| 29 | How many different 5-digit even numbers are possible form digit 1,2,4,6,8   | A. $4 : 4!$<br>B. $4!$<br>C. $5!$<br>D. $4! + 4!$   |
| 30 | If for two events $A$ and $B$ , $P(A \cup B) = 1$ , then events $A$ and $B$ are   | A. Certain events<br>B. Mutually exclusive<br>C. Complementary events<br>D. Independent   |