



BK BIRLA CENTRE FOR EDUCATION
SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL



PERIODIC TEST-2 (2024-25)

MATHEMATICS (041)

Class: XI Science
Date: 02/12/24
Admission Number: _____

Duration: 1 Hour
Max. Marks: 25
Roll number: _____

General Instructions:

Question 1 to 5 carries ONE mark each. Questions 6 to 9 carries TWO marks each. Questions 10 to 13 carries THREE marks each.

- The value of ${}^{14}C_1 + {}^{14}C_3 + {}^{14}C_5 + \dots + {}^{14}C_{11}$ is
(A) $2^{14}-1$ (B) $2^{14}-14$ (C) 2^{12} (D) $2^{13}-14$
- The number of terms in the expansion of $[(2x + y^3)^4]^7$ is
(A) 28 (B) 29 (C) 30 (D) 27
- Write the first three terms of the sequence whose general term is given by $a_n = 2n+5$.
(A) 1, 3, 5 (B) 2, 4, 6 (C) 7, 9, 11 (D) 6, 8, 10
- What is the 2nd term of the sequence defined by $a_n = \frac{n^2(n+1)}{3}$
(A) 2 (B) 3 (C) 4 (D) 5

Assertion and Reasoning questions: In the following two questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- (A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true and R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
- Assertion (A): The number of terms in $(1+x^2+2x)^{20}$ is 41.
Reason (R): The number of terms in the expansion of $(a+b)^x$ is $x+1$.
- Find the largest coefficient in the expansion of $(1+x)^{30}$.
- Which term is greater $(1.2)^{400}$ or 800.
- Let the sequence a_n be defined as follows: $a_1 = 1$, $a_n = a_{n-1} + 2$ for $n \geq 2$. Find first term and write corresponding series.
- Find the sum of first 8 terms of the G.P. $10, 5, \frac{5}{2}, \dots$.

- 10 Simplify $(x+2y)^8 + (x-2y)^8$.
- 11 Prove that $(\sqrt{3}+\sqrt{2})^6+(\sqrt{3}-\sqrt{2})^6=970$.
- 12 In a G.P. of positive terms, if any term is equal to the sum of the next two terms, then find the common ratio of the G.P.
- 13 The product of the first three terms of a G.P. is 1000.If we add 6 to its second term and 7 to its third term, the resulting three terms form an A.P. Find the terms of the G.P.
