

I. Choose the best answer and write the letter of your choice on the space provided.

1. Which one is the 25th term of an arithmetic sequence 6, 10, 14, 18
A. 101 B. 102 C. 99 D. 104
2. How many terms of the series may be taken their sum is 65 for sequence $-7, -4, -1, 2 \dots$
A. 10 B. 20 C. 30 D. 40
3. The third and eleventh terms of an arithmetic sequence are -5 and 35 respectively, then the sum of the first ten terms is.
A. 65 B. 75 C. 105 D. 45
4. Let the sum of the first n^{th} terms of a sequence $S_n = 2n^2$, then the fourth term a_4 is ?
A. 14 B. 12 C. 16 D. 8
5. Let $\{a_n\}$ be a sequence such that $a_1 = a_2 = 1$ & $a_{n+2} = 2a_n + a_{n+1}$ for $n \geq 3$, then what is the fifth term of the sequence?
A. 10 B. 5 C. 11 D. 9
6. The sum of the first seven terms of an A.P is 70 and its 3rd term is 6 then the twentieth term is.
A. 74 B. 60 C. 80 D. 69
7. $1 + \frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \dots$ is equal to
A. $\frac{2}{3}$ B. $\frac{3}{2}$ C. $-\frac{3}{2}$ D. $\frac{5}{2}$
8. $\sum_{n=1}^{40} -3$ is equal to
A. -111 B. -108 C. -120 D. -132
9. What is the sum of the first 20 terms of the sequence 3, 7, 11, 15...?
A. 741 B. 820 C. 899 D. 903
10. The sum of all multiples of 6 between 10 & 87 is equal to
A. 714 B. 624 C. 540 D. 462
11. How many terms of the sequence $\{49, 46, 43, 40, \dots\}$ must be taken to have a maximum partial sum?
A. 17 B. 14 C. 13 D. 12
12. If the sum of n term of an arithmetic progression is $3n^2 + 5n$ and $a_n = 164$, then n is equal to:
A. 26 B. 27 C. 28 D. 24
13. The sum of the first 8 terms of a geometric sequence with first term 0.3 and common ratio $\frac{1}{10}$ is
A. $\frac{3}{10} \left(\frac{10^8 - 1}{10^8} \right)$ B. $\frac{1}{3} \left(\frac{10^8 - 1}{10^8} \right)$ C. $\frac{1}{3} \left(\frac{10^8 - 1}{10^7} \right)$ D. $\frac{3}{10} \left(\frac{10^8 - 1}{9} \right)$
14. The 15th term of the sequence $\{0, -16, -32, -48, \dots\}$ A. -245 B. -225 C. -224 D. -242
15. Which of the following series is convergent?
A. $\sum_{n=1}^{\infty} 2^{2n-5}$ B. $\sum_{n=1}^{\infty} \left(\frac{3}{2}\right)^n$ C. $\sum_{n=1}^{\infty} \left(\frac{2}{5}\right)^{-n}$ D. $\sum_{n=1}^{\infty} 5^{11-2n}$

16. Suppose 3, 7, 11, 15, 19, 23... are the first six terms of an arithmetic sequence $\{a_n\}_{n=1}^{\infty}$, then which one of the following is the 15th term of the sequence?
A. 52 B. 59 C. 66 D. 60
17. let $S_n = 4n^2$, $n=1, 2, 3, \dots$ be the sum of the first n terms of a sequence $\{a_n\}_{n=1}^{\infty}$. Then a_3 is
A. 8 B. 12 C. 16 D. 20
18. Suppose $\{a_n\}$ is an arithmetic progression such that $a_5 = 21$ and $a_{10} = 66$ then a_2 is equal to
A. -6 B. -15 C. 3 D. 9
19. Which of the following is a Geometric series?
A. 01, 0.11, 0.12, 0.13, ... B. 8, -4, 2, -1, ...
C. 0.1, 0.01, 0.0011, 0.000111, ... D. 1, 1.5, 2.5, 3.5, ..
20. The sum of the first four terms of an arithmetic progression is 56 and the sum of the last four terms is 112. If its first term is 11, then the number of terms are: _____
A. 10 B. 18 C. 12 D. 11
21. If $\{A_n\}$ is an arithmetic sequence with $A_1 = 5$ and $A_5 = 21$, then the partial sum $\sum_{n=1}^{20} A_n$ is equal to
A. 760 B. 780 C. 860 D. 870
22. How many terms of geometric progression $3, 3^2, 3^2, \dots$ are needed to give the sum 120.
A. 4 B. 12 C. 3 D. 6
23. If the n^{th} partial sum of an arithmetic sequence $\{A_n\}$ is $4n^2$ the value of A_{10} is
A. 80 B. 74 C. 76 D. 70
24. The sum of an infinite Geometric progression is 6. If the sum of the first two terms is $\frac{9}{2}$, then what is the first term
A. 1 B. $\frac{5}{2}$ C. 3 or $\frac{3}{2}$ D. 9 or 3
25. Which of the following geometric is convergent?
A. $\sum_{n=1}^{\infty} (\sqrt{3})^n$ B. $\sum_{n=1}^{\infty} (\frac{3}{2})^n$ C. $\sum_{n=1}^{\infty} (\frac{1}{10})^n$ D. $\sum_{n=1}^{\infty} (-3)^n$
26. If the sum of first two terms of Ap is 10 and the sum of the last two terms is 100, then the sum of first and last term is
a. 10 B. 55 C. 100 D. 110

II. Work out

- If $s_n = 3n^2$ find a_n Note $a_n = s_n - s_{n-1}$
- If the sum of first terms of an Ap is n^2 , then find its 10th term?
- How many two digits are divisible by 5
- The sum of the first three terms of a geometric is $\frac{39}{10}$ and their product is 1. Find the common and three terms.
- The sum of first three terms of a geometric progression is 16 and the sum of the next three terms is 128. Determine the first term, the common ratio and the sum to n terms of the geometric progression.