

Comprehensive Test Series-01

Sequences and Series

TIME: 1.5 hr.

MM: 50

General Instructions:

- All Questions are compulsory.
- Marks are given alongwith the questions individually.
- Use of calculator is not permitted.

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- Q.1 If the sum of n terms of an A.P is $nP + \frac{1}{2}n(n-1)Q$, where P and Q are constants, find the common difference. (4)
- Q.2 The sum of n terms of two arithmetic progressions are in the ratio $(3n+8) : (7n+15)$. Find the ratio of their 12th terms. (4)
- Q.3 Insert 6 numbers between 3 and 24 such that the resulting sequence is an A.P. (4)
- Q.4 In a A.P, the first term is 2 and the sum of the first five terms is one-fourth of the next five terms. Show that 20th term is -112. (4)
- Q.5 If $\frac{a^n + b^n}{a^{n-1} + b^{n-1}}$ is the A.M between a and b, then find the value of n. (4)
- Q.6 The difference between any two consecutive interior angles of a polygon is 5. If the smallest angle is 120, find the number of the sides of the polygon. (4)
- Q.7 Find the sum of the sequence 7,77,777,7777,.....to n terms. (5)
- Q.8 Find a G.P for which sum of the first two terms is -4 and the fifth term is 4 times the third term. (4)
- Q.9 The sum of two numbers is 6 times their geometric means, show that numbers are in the ratio $(3+2\sqrt{2}) : (3-2\sqrt{2})$ (5)
- Q.10 If A.M and G.M of roots of a quadratic equations are 8 and 5, respectively then obtain the quadratic equation. (4)
- Q.11 Find the sum to n terms
 $1 \times 2 + 2 \times 3 + 3 \times 4 + \dots$ (4)
- Q.12 If the first and nth term of a G.P are a and b respectively and if P is the product on n terms, prove that $p^2 = (ab)^n$ (4)