Model Question Paper

Sequences and Series of real numbers - Part I

10th Standard

Maths

Reg.No. : | | | | | | |

I.Answer all the questions.
II.Use Blue pen only.
III.Question No 13 is compulsory

Time : 01:00:00 Hrs

Total Marks : 40

Section-A

4 x 1 = 4

1) Which one of the following is not true?

(a) A sequence is a real valued function defined on N. (b) Every function represents a sequence. (c) A sequence may have infinitely many terms.

(d) A sequence may have a finite number of terms.

2) The 8^{th} term of the sequence $1, 1, 2, 3, 5, 8, \cdots$ is

(a) 25 (b) 24 (c) 23 (d) 21

3) The next term of $\frac{1}{20}$ in the sequence $\frac{1}{2}, \frac{1}{6}, \frac{1}{12}, \frac{1}{20}. \cdots is$

(a) $\frac{1}{24}$ (b) $\frac{1}{22}$ (c) $\frac{1}{30}$ (d) $\frac{1}{18}$

4) If a, b, c, l, m are in A.P, then the value of $a - 4b + 6c - 4l + m$ is

(a) 1 (b) 2 (c) 3 (d) 0

Section-B

5 x 2 = 10

5) Write the first three terms in a sequence whose nth term is given by $c_n = \frac{n(n+1)(2n+1)}{6}, \ \forall n \epsilon N$

6) Write the first five terms of each of the following sequences. $a_1 = -1, \quad a_n = \frac{a_{n-1}}{n+2}, \quad n > 1 and \forall n \epsilon N$

7) Which of the following sequences are in an A.P.? $\frac{2}{3}, \frac{4}{5}, \frac{6}{7}, \cdots .$

8) Find the first term and common difference of the A.P. $5, 2, -1, -4, \cdots .$

9) Find the smallest positive integer n such that$t_n$of the arithmetic sequence $20, 19\frac{1}{4}, 18\frac{1}{2}, \cdots$is negative.?

Section-C

4 x 5 = 20

10) The 4^{th} term of a geometric sequence is$\frac{2}{3}$ and the seventh term is $\frac{16}{81}$. Find the geometric sequence.

11) The number of bacteria in a certain culture doubles every hour. If there were 30 bacteria present in the culture initially, how many bacteria will be present at the end of 14^{th}hour?

12) An amount RS.500 is deposited in a bank which pays annual interest at the rate of 10% compounded annually. What will be the value of this deposit at the end of 10^{th} year?

13) a) The sum of first three terms of a geometric sequence is$\frac{13}{12}$ and their product is -1. Find the common ratio and the terms.

(OR)

b) If a, b, c, d are in geometric sequence, then prove that $(b-c)^2 + (c-a)^2 + (d-b)^2 = (a-d)^2$

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