

Topic : Sequence & Series

Type of Questions

M.M., Min.

Single choice Objective (no negative marking) Q.1,2,3

(3 marks, 3 min.)

[9, 9]

Assertion and Reason (no negative marking) Q.4

(3 marks, 3 min.)

[3, 3]

Subjective Questions (no negative marking) Q.5,6,7

(4 marks, 5 min.)

[12, 15]

1. If the product of two positive numbers is 9, then the possible value of the sum of their reciprocals lies in the interval :

- (A) $\left[\frac{1}{3}, \infty\right)$ (B) $[1, \infty)$ (C) $\left[\frac{4}{3}, \infty\right)$ (D) $\left[\frac{2}{3}, \infty\right)$

2. Let the sequence $a_1, a_2, a_3, \dots, a_{2n-1}, a_{2n}$ form an A.P. Then the value of,

$$a_1^2 - a_2^2 + a_3^2 - \dots + a_{2n-1}^2 - a_{2n}^2 \text{ is :}$$

- (A) $\frac{2n}{n-1} (a_{2n}^2 - a_1^2)$ (B) $\frac{n}{2n-1} (a_1^2 - a_{2n}^2)$ (C) $\frac{n}{n+1} (a_1^2 + a_{2n}^2)$ (D) $\frac{n}{n-1} (a_1^2 + a_{2n}^2)$

3. If a, b, c are three unequal numbers such that a, b, c are in A.P. and $b - a, c - b, a$ are in G.P., then a : b : c is

- (A) 1 : 2 : 3 (B) 1 : 3 : 5 (C) 2 : 3 : 4 (D) 1 : 2 : 4

4. **STATEMENT-1 :** If x, y, z are the sides of a triangle such that $x + y + z = 1$,

$$\text{then } \left(\frac{2x-1+2y-1+2z-1}{3}\right) \geq ((2x-1)(2y-1)(2z-1))^{1/3}.$$

STATEMENT-2 : For positive numbers $A.M. \geq G.M. \geq H.M.$

- (A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.
 (B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1
 (C) Statement-1 is True, Statement-2 is False
 (D) Statement-1 is False, Statement-2 is True

5. A postman delivered daily for 42 days 4 more letters each day than on the previous day. The total delivery for the first 24 days of the period was the same as that for the last 18 days. How many letters did he deliver during the whole period ?

6. K is a positive integer such that $36 + K, 300 + K, 596 + K$ are the squares of three consecutive terms of an AP. Find K.

7. If n^{th} term of the series $3\frac{1}{3}, 2, 1\frac{3}{7}, 1\frac{1}{9}, \dots$ is $\frac{an+10}{bn+c}, \forall n \in \mathbb{N}$, then find the value of $(a + b + c)$



Answers Key

1. (D) 2. (B) 3. (A) 4. (D)
5. 12096 6. 925 7. 3

