MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 44

Total Marks : 27

Max. Time : 30 min.

Topic : Sequence & Series

Type of Questions		**M.M., Min.**
Comprehension (no negative marking) Q.1 to Q.3	**(3 marks, 3 min.)**	**[9, 9]**
Single choice Objective (no negative marking) Q.4,5	**(3 marks, 3 min.)**	**[6, 6]**
Subjective Questions (no negative marking) Q.6,7,8	**(4 marks, 5 min.)**	**[12, 15]**

COMPREHENSION : (Q. NO. 1 TO 3)

Let $x \in R^+$ such that {x}, [x], x are in G.P., where [.] & {.} are greatest integer & fractional part functions respectively.

1 Common ratio of this G.P. is

(A) $\frac{-1-\sqrt{5}}{2}$ (B) $\frac{-1+\sqrt{5}}{2}$ (C) $\frac{1-\sqrt{5}}{4}$ (D) $\frac{1+\sqrt{5}}{2}$

2 The value of x is

(A) $\frac{-1-\sqrt{5}}{2}$ (B) $\sqrt{5}$ (C) $\frac{1+\sqrt{5}}{2}$ (D) none of these

3 Sum to n terms of this G.P.

(A) $2^n \cos^n \frac{\pi}{5} - 1$ (B) $2^n \sin^n \frac{\pi}{5} - 1$ (C) $2^n \cos^n \frac{\pi}{5}$ (D) $2^n \sin^n \frac{\pi}{5}$

4. First, second and seventh terms of an A.P. (all the terms are distinct), whose sum is 93, are in G.P. Fourth term of this G.P. is

(A) 21 (B) 31 (C) 75 (D) 375

5. If $\sum_{r=1}^{n} t_r = \frac{1}{12} n(n+1)(n+2)$, then the value of $\sum_{r=1}^{n} \frac{1}{t_r}$ is

(A) $\frac{2n}{n+1}$ (B) $\frac{n}{(n+1)}$ (C) $\frac{4n}{n+1}$ (D) $\frac{3n}{n+1}$

6. Find the number of terms of a G.P. in which the ratio of the sum of the first eleven terms to the sum of the last eleven terms is 1/8, and the ratio of the sum of all the terms without the first nine to the sum of all the terms without the last nine is 2.

7. If $0 < r < 1$ and $m \in N$, then prove that $(2m + 1) r^m (1 - r) < 1 - r^{2m+1}$

8. The value of x + y + z is 15 if a, x, y, z, b are in AP while the value of (1/x) + (1/y) + (1/z) is 5/3 if a, x, y, z, b are in HP. Find a and b.

Answers Key

1 (D) **2** (C) **3** (A) **4.** (D)

5. (C) **6.** 38 **8.** a = 1, b = 9 **OR** b = 1, a = 9