MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 26

Total Marks : 23

Max. Time : 25 min.

Topics : Sequence & Series, Trigonometric Ratio

Type of Questions		**M.M., Min.**
Comprehension (no negative marking) Q.1 to Q.2	**(3 marks, 3 min.)**	**[6, 6]**
Single choice Objective (no negative marking) Q.3,4,5	**(3 marks, 3 min.)**	**[9, 9]**
Subjective Questions (no negative marking) Q.6,7	**(4 marks, 5 min.)**	**[8, 10]**

COMPREHENSION : (Q. 1 to Q. 2)

Between two numbers whose sum is $2\frac{1}{6}$, an even number of arithmatic means are inserted. If the sum of these means exceeds their number by unity, then the number of means is t., then answer the following questions.

1. The value of t is

(A) 12 (B) 11 (C) 15 (D) 16

2. The third term of a G.P. is the square of the first term. If the second term is 8, then the 6th term is (in terms of t)

(A) 10t – 8 (B) 10t + 8 (C) 8t + 10 (D) 8t – 10

3. If $P = \frac{\sin 300^\circ \cdot \tan 330^\circ \cdot \sec 420^\circ}{\tan 135^\circ \cdot \sin 210^\circ \cdot \sec 315^\circ}$ & $Q = \frac{\sec 480^\circ \cdot \operatorname{cosec} 570^\circ \cdot \tan 330^\circ}{\sin 600^\circ \cdot \cos 660^\circ \cdot \cot 405^\circ}$,

then P & Q are respectively :

(A) 2 , 16 (B) $\sqrt{2}$, $\frac{16}{3}$ (C) – 2 , $\frac{3}{16}$ (D) none of these

4. The product cot 123° . cot 133° . cot 137° . cot 147° , when simplified is equal to :

(A) – 1 (B) tan 37° (C) cot 33° (D) 1

5. In a sequence, if the sum of the first 'n' terms is given by $S_n = 2^{np} - 1$, where 'p' is a fixed non zero real number the nature of the sequence, is

(A) A.P. (B) G.P. (C) H.P. (D) None of these

6. If θ lies in III quadrant and $\sin\theta = -\frac{12}{13}$, find $\cos\theta$, $\tan\theta$, $\cot\theta$

7. Find the sum of the series

$1 + 2(1 - x) + 3(1 - x)(1 - 2x) + \ldots\ldots + n\ (1 - x)(1 - 2x) \ldots\ldots (1 - (n - 1)x)$

Answers Key

1. (A) **2.** (B) **3.** (B) **4.** (D) **5.** (B)

6. $\cos\theta = -\frac{5}{13}$, $\tan\theta = \frac{12}{5}$, $\cot\theta = \frac{5}{12}$

7. $\Sigma T_r = -\frac{1}{x}[(1-x)(1-2x)\ldots\ldots(1-nx)-1]$