MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 25

Total Marks : 26

Max. Time : 26 min.

Topics : Sequence & Series, Trigonometric Ratio

Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q.1,2,3,4,5,6	**(3 marks, 3 min.)**	**[18, 18]**
Match the Following (no negative marking) Q.7	**(8 marks, 8 min.)**	**[8, 8]**

1. If the expression

$$\cos\left(x-\frac{3\pi}{2}\right)+\sin\left(\frac{3\pi}{2}+x\right)+\sin(32\pi+x)-18\cos(19\pi-x)+\cos(56\pi+x)-9\sin(x+17\pi)$$

is expressed in the form of a sinx + b cosx, then (a + b) is equal to

(A) 17 (B) 27 (C) 13 (D) 23

2. $\cos(2001)\,\pi+\cot(2001)\frac{\pi}{2}+\sec(2001)\frac{\pi}{3}+\tan(2001)\frac{\pi}{4}+\text{cosec}(2001)\frac{\pi}{6}$ equals to

(A) 0 (B) 1 (C) -2 (D) not defined

3. There is a certain sequence of positive real numbers. Beginning from the third term, each term of the sequence is equal to the sum of all the previous terms. The seventh term is equal to 1000 and the first term is equal to 1. The second term of this sequence is equal to

(A) 246 (B) $\frac{123}{2}$ (C) $\frac{123}{4}$ (D) 124

4. If in a sequence $< T_n > = \frac{n}{4n^4+1}$, then find sum upto infinite terms of the sequence

(A) $\frac{1}{4}$ (B) $\frac{1}{8}$ (C) $\frac{1}{5}$ (D) $\frac{4}{5}$

5. Let $p, q, r \in R^+$ and $27(pqr) \geq (p+q+r)^3$ and $3p + 4q + 5r = 12$, then $p^3 + q^4 + r^5$ is equal to

(A) 3 (B) 6 (C) 2 (D) none of these

6. If n is any positive integer, then find the number whose square is $\underbrace{111.....1}_{2n\text{ times}} - \underbrace{222.....2}_{n\text{ times}}$

7. **Match the following**

Column – I		**Column – II**	
(A)	$\cos\frac{73\pi}{4}$	(p)	$-\frac{1}{\sqrt{3}}$
(B)	$\tan\frac{1397\pi}{6}$	(q)	0
(C)	$\sin\frac{2007\,\pi}{6}$	(r)	$\frac{1}{\sqrt{2}}$
(D)	$\sin(10^4\pi)$	(s)	1

Answers Key

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

5. (A) **6.** $\underbrace{333.....3}_{\text{n times}}$

7. (A)→(r), (B)→(p), (C)→(s), (D)→(q)