MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 5

Total Marks : 27

Max. Time : 31 min.

Topics : Inverse Trigonometric Function, Fundamentals of Mathematics, Quadratic Equation

Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q. 1, 2, 3	**(3 marks, 3 min.)**	**[9, 9]**
True or False (no negative marking) Q. 4	**(2 marks, 2 min.)**	**[2, 2]**
Subjective Questions (no negative marking) Q. 5, 6, 7, 8	**(4 marks, 5 min.)**	**[16, 20]**

1. $\cos\left(\sin^{-1}\frac{1}{2}+\cos^{-1}\frac{1}{3}\right)$ =

(A) $\frac{\sqrt{3}+\sqrt{8}}{6}$ (B) $\frac{-\sqrt{3}+\sqrt{8}}{6}$ (C) $\frac{\sqrt{3}-\sqrt{8}}{6}$ (D) 0

2. $a^{\sqrt{\log_a b}} - b^{\sqrt{\log_b a}}$ (where a, b > 0 and a, b $\neq$ 1) is equal to.

(A) 0 (B) ab (C) $\sqrt{a-b}$ (D) None of these

3. $\tan\left(\tan^{-1}5+\cot^{-1}\frac{1}{3}\right)$ =

(A) $\frac{4}{7}$ (B) $-\frac{4}{7}$ (C) $\frac{3}{7}$ (D) not defined

4. State true or false

(i) $\tan^{-1}\frac{\pi}{4}=1$ (ii) $\cos^{-1}0 = 1$ (iii) $\sin^{-1}\frac{\pi}{2}$ = not defined

(iv) $\tan^{-1}x = \cot^{-1}\frac{1}{x}$ (v) $\text{cosec}^{-1}x = \sin^{-1}\frac{1}{x}$, $|x| \geq 1$

5. For what values of $a \in R$ does the equation $ax^2 + x + a - 1 = 0$ possess two distinct real roots x_1 and x_2 satisfying the inequality $\left|\frac{1}{x_1}-\frac{1}{x_2}\right| > 1$?

6. Find the value of k if product of two of the roots of the equation $x^4 - 37x^3 + kx^2 + 808x - 1984 = 0$ is 62

7. Find the number of real solutions of the equation $x^2 + \left(\frac{x}{x-1}\right)^2 = 8$

8. Which is greater $\frac{\pi}{3}$ or $\tan^{-1}\frac{\pi}{3}$

Answers Key

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

4. **(i)** F **(ii)** F **(iii)** T **(iv)** F **(v)** T

5. For all a $\in$ (0, 1) $\cup$ (1, 6/5) **6.** 162

7. Three **8.** $\frac{\pi}{3}$