MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 6

Total Marks : 31

Max. Time : 30 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, 4, 5	**(3 marks, 3 min.)**	**[12, 12]**
Multiple choice objective (no negative marking) Q.3	**(5 marks, 4 min.)**	**[5, 4]**
Short Subjective Questions (no negative marking) Q.6, 7	**(3 marks, 3 min.)**	**[6, 6]**
Match the Following (no negative marking) Q. 8	**(8 marks, 8 min.)**	**[8, 8]**

1. If $\sin^{-1}\left(a-\frac{a^2}{3}+\frac{a^3}{9}+...\right)+\cos^{-1}(1+b+b^2+...)=\pi/2$, then the value of 'a' and 'b' may be

(A) a = –3 & b = 1 (B) a = 1 & b = –1/3 (C) a = 6 & $b=\frac{1}{2}$ (D) none of these

2. If sum of the roots of the quadratic equation, $ax^2 + bx + c = 0$ is 12, then the sum of the roots of the equation, $a(x + 1)^2 + b(x + 1) + c = 0$ is :

(A) 9 (B) 10 (C) 12 (D) 14

3. In the quadratic equation $x^2 + (p + iq)x + 3i = 0$, p & q are real . If the sum of the squares of the roots is 8 then :

(A) p = 3, q = – 1 (B) p = 3, q = 1 (C) p = – 3, q = – 1 (D) p = – 3, q = 1

4. If $\cos^{-1}\left(\frac{n}{2\pi}\right) > \frac{2\pi}{3}$, then the minimum and maximum values, of integer n are respectively

(A) – 6 and – 3 (B) – 6 and – 4 (C) 3 and 6 (D) 4 and 6

5. Solve for x, if $[\cos^{-1}x] = [\sin^{-1}x]$ (where [.] represents greatest integral part function).

(A) [–1 , cos 1) (B) (cos 1 , sin 1) (C) [– 1, sin 1) (D) [sin1, 1]

6. Spot in which step there is error

If $f(x) = \sin^{-1}x + \cos^{-1}x + \tan^{-1}x$, so $f(x) = \frac{\pi}{2} + \tan^{-1}x$ Since $-\frac{\pi}{2} < \tan^{-1}x < \frac{\pi}{2}$

$\Rightarrow \quad 0 < \tan^{-1}x + \frac{\pi}{2} < \pi \quad \Rightarrow \quad 0 < f(x) < \pi$

7. Find the set of all values of 'a' for which the equation, $(1+a)\left(\frac{x^2}{x^2+1}\right)^2 - 3a\frac{x^2}{x^2+1} + 4a = 0$ have real roots.

8. **Match the following**

	Column - I		**Column - II**
(A)	The minimum value of $f(x) = \|x – 4\| + \|x – 6\| + \|x – 2\|$ is	(p)	1
(B)	The total number of solution/solutions of $\|x\| = \|\cos x\|$ is/are	(q)	2
(C)	The total number of real roots of equation $\sqrt{x} + \sqrt{x-\sqrt{1-x}} = 1$ is	(r)	3
(D)	Number of distinct normal form (3, 2) to the parabola $y^2 = 4x$ is	(s)	4
		(t)	0

Answers Key

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

5. (B) **6.** Domain [–1, 1]

7. $-\frac{1}{2} < a \leq 0$

8. (A) $\rightarrow$ (s), (B) $\rightarrow$ (q), (C) $\rightarrow$ (p), (D) $\rightarrow$ (p)