MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 10

Total Marks : 35

Max. Time : 38 min.

Topics : Fundamentals of Mathematics, Quadratic Equation

Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q.1, 2, 3, 4, 5	**(3 marks, 3 min.)**	**[15, 15]**
Subjective Questions (no negative marking) Q.6,7,8	**(4 marks, 5 min.)**	**[12, 15]**
Match the Following (no negative marking) Q.9	**(8 marks, 8 min.)**	**[8, 8]**

1. The set of all values of 'x' which satisfies the inequation $\left|1-\frac{|x|}{1+|x|}\right| \geq \frac{1}{2}$ is :

(A) $[-1, 1]$ (B) $(-\infty, -1]$ (C) $[1, \infty)$ (D) $(0, 1)$

2. The quadratic equation $x^2 - 9x + 3 = 0$ has roots α and β. If $x^2 - bx - c = 0$ has roots α^2 and β^2, then (b, c) is

(A) (75, –9) (B) (–75, 9) (C) (– 87, 4) (D) (–87, 9)

3. If the difference of the roots of the equation $x^2 + p x + q = 0$ be unity, then $(p^2 + 4 q^2)$ is equal to

(A) $(1 + 2 q)^2$ (B) $(1 - 2 q)^2$ (C) $4 (p - q)^2$ (D) $2 (p - q)^2$

4. The number of integral value(s) of x satisfying the equation $|x^4.3^{|x-2|}.5^{x-1}| = -x^4.3^{|x-2|}.5^{x-1}$ is

(A) 2 (B) 3 (C) 1 (D) infinite

5. If p & q are distinct reals , then

$2\{(x-p)(x-q) + (p-x)(p-q) + (q-x)(q-p)\} = (p-q)^2 + (x-p)^2 + (x-q)^2$

is satisfied by :

(A) no value of 'x' (B) exactly one value of 'x'

(C) exactly two values of 'x' (D) infinite values of 'x'

6. If α, β are the roots of the equation $x^2 - 2x + 3 = 0$ then find the equation whose roots are $\alpha^3 - 3\alpha^2 + 5\alpha - 2$ and $\beta^3 - \beta^2 + \beta + 5$.

7. Solve the equation : $\left|\frac{x^2-8x+12}{x^2-10x+21}\right| = \frac{-(x^2-8x+12)}{x^2-10x+21}$

8. Find the set of values of x satisfying the equation $x^2.2^{x+1} + 2^{|x-3|+2} = x^2 2^{|x-3|+4} + 2^{x-1}$

9. **Match the column**

If α, β are the roots of the equation $x^2 - 4x + 1 = 0$, then

Column – I		**Column – II**	
(A)	$\alpha^2 + \beta^2$	(p)	52
(B)	$\alpha^3 + \beta^3$	(q)	4
(C)	$\lvert\alpha - \beta\rvert$	(r)	14
(D)	$\frac{1}{\alpha} + \frac{1}{\beta}$	(s)	$2\sqrt{3}$

Answers Key

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

6. $x^2 - 3x + 2 = 0$ **7.** $x \in [2, 3) \cup [6, 7)$

8. $x \in [3, \infty) \cup \{-1/2, 1/2\}$

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