MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 11

Total Marks : 29

Max. Time : 31 min.

Topics : Fundamentals of Mathematics, Quadratic Equation, Complex Number

Type of Questions		M.M.,	Min.
Comprehension (no negative marking) Q.1 to Q.3	(3 marks, 3 min.)	[9,	9]
Single choice Objective (no negative marking) Q.4, 5, 6, 7	(3 marks, 3 min.)	[12,	12]
Subjective Questions (no negative marking) Q.8,9	(4 marks, 5 min.)	[8,	10]

COMPREHENSION (Q. No. 1 to 3)

Consider the equation $|2x - 1| - 2|x - 2| = \lambda$

1. If the above equation has only one solution, then λ belongs to

(A) $\{-3, 3\}$ (B) $[-3, 3]$ (C) $(-3, 3)$ (D) ϕ

2. If the above equation has more than one solutions then λ belongs to

(A) $\{-3, 3\}$ (B) $[-3, 3]$ (C) $(-3, 3)$ (D) ϕ

3. If $\lambda = 6$, then the above equation has

(A) only one solution (B) only two solutions. (C) no solution. (D) more than two solutions.

4. If the roots of the equation $x^2 + 2cx + ab = 0$ are real and unequal, then the roots of the equation $x^2 - 2(a + b)x + (a^2 + b^2 + 2c^2) = 0$ are :

(A) real and unequal (B) real and equal

(C) imaginary (D) rational

5. If $-3 + 5i$ is a root of the equation $x^2 + px + q = 0$, then the ordered pair (p, q) is ($p, q \in R$)

(A) $(-6, 34)$ (B) $(6, 34)$ (C) $(34, -6)$ (D) $(34, 6)$

6. If the quadratic equation $ax^2 + bx + a^2 + b^2 + c^2 - ab - bc - ca = 0$, where a , b , c are distinct reals, has imaginary roots then :

(A) $2(a - b) + (a - b)^2 + (b - c)^2 + (c - a)^2 > 0$

(B) $2(a - b) + (a - b)^2 + (b - c)^2 + (c - a)^2 < 0$

(C) $2(a - b) + (a - b)^2 + (b - c)^2 + (c - a)^2 = 0$

(D) none

7. If the quadratic equations $ax^2 + 2cx + b = 0$ & $ax^2 + 2bx + c = 0$ $(b \neq c)$ have a common root, then $a + 4b + 4c$ is equal to :

(A) -2 (B) -2 (C) 0 (D) 1

8. Solve the equation : $|x+1| - |x| + 3|x-1| - 2|x-2| = x+2$

9. Solve the equation : $\left|\frac{x+1}{x}\right| + |x + 1| = \frac{(x+1)^2}{x}$

Answers Key

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

6. (A) **7.** (C) **8.** $\mathbf{x \in [2, \infty) \cup \{-2\}}$

9. $x \in \{-1\} \cup (0, \infty)$