DPP – 02
(LOCATION OF ROOTS)

1. Find the values of m for which both roots of equation $x^2 - mx + 1 = 0$ are less than unity.

2. For what real values of m both roots of the equation $x^2 - 6mx + 9m^2 - 2m + 2 = 0$ exceed 3?

3. Find the values of m for which exactly one root of the equation $x^2 - 2mx + m^2 - 1 = 0$ lies in the interval $(-2, 4)$.

4. If the equation $ax^2 + bx + c = 0 (a > 0)$ has two roots α and β such that $\alpha < -2$ and $\beta > 2$ then

(A) $b^2 - 4ac > 0$

(B) $4a + 2|b| + c < 0$

(C) $a + |b| + c = 0$

(D) $c < 0$

5. Find the value of ' λ ' for which $2x^2 - 2(2\lambda + 1)x + \lambda(\lambda + 1) = 0$ may have one root less than λ and other root greater than λ.

6. Find the value of ' a ' for which the equation $2x^2 - 2(2a + 1)x + a(a - 1) = 0$ has roots α and β such that $\alpha < a < \beta$.

7. Find all values of b for which $x^2 - x + b - 3 < 0$ for atleast one negative x.

8. Find all possible parameters ' a ' for which $f(x) = (a^2 + a - 2)x^2 - (a + 5)x - 2$ is non +ve for every $x \in [0,1]$.

ANSWER KEY

1. $(-\infty, -2)$

2. $\left(\frac{11}{9}, \infty\right)$

3. $(-3, -1) \cup (3,5)$

4. (A, B)

5. $(-\infty, -1) \cup (0, \infty)$

6. $(-\infty, -1) \cup (0, \infty)$

7. $(-\infty, 3)$

8. $(-3,3)$