

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]

- 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) $(0, 1)$
- 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)
- If the difference of the roots of the equation $x^2 + px + q = 0$ be unity, then $(p^2 + 4q^2)$ is equal to
 (A) $(1 + 2q)^2$ (B) $(1 - 2q)^2$ (C) $4(p - q)^2$ (D) $2(p - q)^2$
- The number of integral value(s) of x satisfying the equation $|x^4 \cdot 3^{|x-2|} \cdot 5^{x-1}| = -x^4 \cdot 3^{|x-2|} \cdot 5^{x-1}$ is
 (A) 2 (B) 3 (C) 1 (D) infinite
- 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'
- 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 $x^2 \cdot 2^{x+1} + 2^{|x-3|+2} = x^2 2^{|x-3|+4} + 2^{x-1}$

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) $ \alpha - \beta $	(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)

