LEVEL-I

[SINGLE CORRECT CHOICE TYPE]

1. The value of 'x' satisfying the equation $|x + 2| = 2(3 - x)$ is in the form of $\frac{a}{b}$ where a and b are co-prime numbers, then the values of (a + b) is equal to

(A) 7 (B) 1 (C) 9 (d) 8

2. Number of solutions of equation $|x - 3| + 2|x + 1| = 4$ is

(A) 0 (B) 1 (C) 2 (D) 3

3. If solution of the equation $(x + 3)|x + 2| + |2x + 3| + 1 = 0$ is in the form of $\frac{a-\sqrt{b}}{2}$, then the values of (a – b) is

(A) –24 (B) –10 (C) 24 (D) 10

4. The number of real solutions of the equation $|x^2 - 1| = x + 3$, is

(A) 4 (B) 1 (C) 0 (D) 2

5. The least integral values of x which satisfy the equation $|x - 3| + 2|x + 1| = 4$, is

(A) –1 (B) 1 (C) 0 (D) –2

6. The complete and exhaustive range of values of 'x' satisfying the inequality $|2x + 1| > x$, is

(A) $\left(-\infty,-\frac{1}{2}\right)\cup\left(-\frac{1}{3},\infty\right)$ (B) $\left(-\infty,-\frac{1}{2}\right)$ (C) $\left(-\frac{1}{3},\infty\right)$ (D) $(-\infty,\infty)$

7. The number of integral solution of $x^2 + 2|x + 3| - 10 \leq 0$, is

(A) 3 (B) 5 (C) 4 (D) 2

8. The number of positive integral solution of inequality $|2x - 4| < x - 1$, is

(A) 0 (B) 1 (C) 2 (D) 3

9. The number of integers not satisfying the inequality $|x| + |x - 3| \geq 5$ is

(A) 2 (B) 3 (C) 4 (D) 5

10. The complete solution set of $|2x + 1| - |5x - 2| \geq 1$, is

(A) $x \in \left(-\infty,\frac{2}{7}\right)\cup\left(\frac{2}{3},\infty\right)$ (B) $x \in \left[\frac{2}{7},\frac{2}{3}\right]$

(C) $x \in R$ (D) $x \in \phi$

LEVEL-II

[SINGLE CORRECT CHOICE TYPE]

11. The values of 'x' satisfying the equation $|x| - 2|x + 1| + 3|x + 2| = 0$, lies in

(A) (–5,–2) (B) [–5,–2) (C) [–5,–2] (D) (0, 3)

12. The product of all solutions of the equation $|x - 3| + |x + 2| - |x - 4| = 3$, is

(A) 12 (B) 6 (C) –12 (D) –6

13. The number of real solutions of the equation $\sqrt{x-1+2\sqrt{x-2}}-\sqrt{x-1-2\sqrt{x-2}}=1$, is

(A) 0 (B) 1 (C) 2 (D) 3

14. Which of the following does not hold true for the expression E = $\sqrt{x^2-2x+1}-\sqrt{x^2+2x+1}$?

(A) E = 2 if $x \le -1$ (B) E = –2x if $-1 < x < 1$

(C) E = –2 if $x \ge 1$ (D) E = –2 for all x

15. The number of real solution of the equation $|x^2 + x + 3| = x + 3$, is

(A) 2 (B) 0 (C) 1 (D) 3

16. The sum of all possible values of x satisfying the equation $|x - |4 - x|| = 4 + 2x$ is

(A)–1 (B) 0 (C) 1 (D) 3

17. The number of integral solution of $|x + 1| + |x - 3| > 2|x - 1|$, is

(A) 5 (B) 6 (C) 3 (D)2

[SUBJECTIVE TYPE]

Solve the following for x :

18. $|x^2 - 1| + |2 - x^2| = 1$

19. $|x^4 - x^2 - 12| = |x^4 - 9| - |x^2 + 3|$

20. $|x + 2| + |x^2 - 5x + 1| \le |x^2 - 4x + 3|$

Answers

RACE # 04

1. (A) **2.** (B) **3.** (A) **4.** (D) **5.** (A) **6.** (D) **7.** (B) **8.** (B) **9.** (C) **10.** (B)

11. (C) **12.** (C) **13.** (B) **14.** (D) **15.** (C) **16.** (B) **17.** (C)

18. $x \in [-\sqrt{2},-1] \cup \left[1,\sqrt{2}\right]$ **19.** $x \in (-\infty,-2] \cup [2,\infty)$ **20.** $x \in \left[-2,\frac{5-\sqrt{21}}{2}\right] \cup \left[\frac{5+\sqrt{21}}{2},\infty\right)$