Quadratic Equation

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Total Ques : 25 **MM:100**

Origin
A JEE Prep Hub

1. No of the real roots of the equation $|x-2|^{x^2-5x+6} = 1$ is :
   a. Exactly two
   b. Exactly four
   c. Exactly three
   d. Can't say

2. If $|x^2-2x-8| + |x^2+x-2| = 3|x+2|$, then the set of all real values of x is
   a. $[1,4]$
   b. $[1,4] \cup \{-2\}$
   c. $[-2,1] \cup [4,\infty)$
   d. $(-\infty,-2] \cup [1,4]$

3. Number of values of x satisfying equations $5\{x\} = x + [x]$ and $[x] - \{x\} = \frac{1}{2}$ is :
   a. 0
   b. 1
   c. 2
   d. 3

4. Let us consider a sequence such that :
   $T_n = \left[\frac{1}{3} + \frac{n}{50}\right]$, here [a] = Greatest Integer Function of a ,
   Then calculate value of $\sum_{n=1}^{91} T_n$ is :
   a. 55
   b. 57
   c. 58
   d. 59

5. How many solutions do the given equation have :
   $\ln x = x + 1$
   a. Two distinct solutions
   b. Only one solution
   c. Two same solutions
   d. None of Above

6. A parabola of the form $ax^2 + bx + c$ with $a > 0$ intersects the graph of $f(x) = \frac{1}{x^2-4}$.
Number of possible distinct solutions of the graph is
   a. 0
   b. 2
   c. 4
   d. 3

7. Let $D = a^2 + b^2 + c^2, a, b$ being consecutive integers and $c = ab$ then $\sqrt{D}$ is :
   a. Always an even integer
   b. Always odd integer
   c. Sometimes an odd integer and sometimes even integer
   d. Always irrational

8. The equation $x^2 + ax + b^2 = 0$ has two roots each of which exceeds a number c,then
   a. $a^2 < 4b^2$
   b. $c^2 + ac + b^2 > 0$
   c. $\frac{-a}{2} < c$
   d. None

9 . If the two equations $ax^2 + 2bx + c = 0$ and $ax^2 + 2cx + b = 0$ have a common root, then $a + 4b + 4c =$
   a. -1
   b. 1
   c. -2
   d. 0

10 If $F(x) = x^4 + 9x^3 + 35x^2 - x + 4$ then $F(-5 + 2\sqrt{-4})$ is equal to
   a. -160
   b. 160
   c. 0
   d. None

11. No. of solution of the given equation in interval $[0,4\pi]$ satisfying the equation $6\sin^2 x - \sin x - 1 = 0$
   a. 2
   b. 6

c. 7
d. 8

12. The equation $a \sin x + b \cos x = c$, where $|c| > \sqrt{a^2 + b^2}$ has
    a. A unique solution
    b. Infinite no of solutions
    c. No solution
    d. None

13. For what values of p ,will the equation
    $(p^2 - 16)x^2 - (p^2 + 5p + 4)x - p^3 - 4p^2 - 4p - 16 = 0$
    Has more than two solutions ?
    a. No such value exist
    b. 4,-5
    c. 4
    d. 4,-4,-1

14. Find the minimum value of the argument
    $a^2 + b^2 + c^2 - ab - bc - ca$, where $a, b, c \in R$
    a. -∞
    b. 1
    c. ∞
    d. 0

15. The value of the expression is
    $\sqrt{6 + \sqrt{6 + \sqrt{6 + \sqrt{6 + \sqrt{6 + ...}}}}}\infty$
    a. 1
    b. 6
    c. 3
    d. 9

16. The minimum value of expression $|x| + |x + \frac{1}{2}| + |x - 3| + |x - \frac{5}{2}|$ is :
    a. 2
    b. 3
    c. 6
    d. 4

17. The set of values of x for which the inequality $[x]^2 - 5[x] + 6 \leq 0$ (where [.] denotes the

GIF) hold good is :

a. $2 \le [x] < 3$
b. $2 \le [x] < 4$
c. $2 \le x < 3$
d. $2 \le [x] \le 4$

18. The least value of $\frac{x^2-6x+5}{x^2+2x+1}$ is :

a. -1
b. $\frac{-1}{2}$
c. $\frac{-1}{4}$
d. $\frac{-1}{3}$

19. Suppose $a^2 = 5a - 8$ and $b^2 = 5b - 8$, then equation whose roots are $\frac{a}{b}$ and $\frac{b}{a}$ is

a. $6x^2 - 5x + 6 = 0$
b. $8x^2 - 9x + 8 = 0$
c. $9x^2 - 8x + 9 = 0$
d. $8x^2 + 9x + 8 = 0$

20. If the set containing the roots of the equation $(a-b)x^2 + (b-c)x + (c-a) = 0$ has infinite no of values then what will be the condition :

a. $a = b \neq c$
b. $a \neq b \neq c$
c. $a = b = c$
d. None

21. If $P(x) = ax^2 + bx + c$ and $Q(x) = -ax^2 + dx + c$,where $ac \neq 0$,then $P(x)Q(x) = 0$ has

a. No real root
b. Exactly two roots
c. At least two distinct roots
d. None of these

22. The sum of all the real roots of the equation $|x-2|^2 + |x-2| - 2 = 0$ is :

a. 7
b. 4
c. 1

d. None

23. If α, β are the roots of $x^2 + 3x - 2 = 0$,then $\frac{\alpha+1}{\beta} + \frac{\beta+1}{\alpha} =$

a. $\frac{-15}{2}$
b. $\frac{6}{5}$
c. $\frac{-5}{2}$
d. -5

24. If one root of the equation $ax^2 + bx + c = 0$, $a \in R^+$, are two consecutive odd positive integers.Then

a. $|b| \leq 4a$
b. $|b| \geq 4a$
c. $|b| \leq 2a$
d. $|b| \leq a$

25. If the roots of the equation

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

Are equal then a,b,c are in :

a. A.P.
b. G.P.
c. H.P.
d. None