Quadratic Equation

15.04.2020

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

Ans : a

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. $(-\infty, -2] \cup [1, 4]$

Ans : c

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

ANs : b

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 $\sum\limits_{n=1}^{91} T_n$ is :
   a. 55
   b. 57
   c. 58
   d. 59

Ans : c

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

Ans : c

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

Ans : d

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

Ans : b

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

Ans : b

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

Ans : d

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

Ans : a

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

       a. 2

       b. 6

       c. 7

       d. 8

Ans : d

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

Ans : c

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

Ans : c

14.   Find the minimum value of the argument
$$a^2 + b^2 + c^2 - ab - bc - ca \text{ , where } a, b, c \in R$$

       a. -∞

       b. 1

       c. ∞

       d. 0

Ans : d

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

Ans : c

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

Ans : c

17. The set of values of x for which the inequality $[x]^2-5[x]+6\leq0$ (where [.] denotes the GIF) hold good is :
    a. $2\leq[x]<3$
    b. $2\leq[x]<4$
    c. $2\leq x<3$
    d. $2\leq[x]\leq4$

Ans : b

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. $\frac{-1}{3}$

ANs : d

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. $8x^2+9x+8=0$

Ans : b

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

Ans : c

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

Ans : C

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

Ans : b

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

Ans : d

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. $|b| \leq a$

Ans : b

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

Ans: c

e.