STRAIGHT OBJECTIVE TYPE

1. Let p, q $\in$ {1, 2, 3, 4}. The number of equation of the form $px^2 + qx + 1 = 0$ having real roots is

(A) 15 (B) 9 (C) 7 (D) 8

2. If $b \in R^+$ then roots of the equation $(2+b)x^2 + (3+b)x + (4+b) = 0$ is

(A) Real and distinct (B) Real and equal

(C) Imaginary (D) Cannot be predicted

3. Suppose a, b, c > 0, then the number of real roots of the equation $ax^2 + b|x| + c = 0$ is

(A) 1 (B) 4 (C) 2 (D) None of these

4. If $x = \sqrt{3+2\sqrt{2}}$, then $x^2 + \frac{1}{x^2}$ is equal to

(A) $2\sqrt{2}$ (B) 8 (C) 6 (D) 1

5. If $x = 3 - \sqrt{8}$, then $x^3 + \frac{1}{x^3}$ is equal to

(A) 6 (B) 198 (C) $6\sqrt{2}$ (D) 102

6. If $\frac{3+2\sqrt{2}}{3-\sqrt{2}} = a + b\sqrt{2}$, then a and b (a, b $\in$ Q) are respectively equal to

(A) $\frac{13}{7}, \frac{9}{7}$ (B) $\frac{9}{7}, \frac{13}{7}$ (C) $\frac{13}{7}, \frac{7}{9}$ (D) $\frac{7}{9}, \frac{7}{13}$

7. The number of solution of the equation, $\log(-2x) = 2\log(x + 1)$ is

(A) zero (B) 1 (C) 2 (D) none

8. The solution set of the equation $e^{4x} - 5e^{2x} + 4 = 0$ over R is

(A) {1, 4} (B) {–4, –1} (C) $\{-\log_e 2, 0, \log_e 2\}$ (D) $\{0, \log_e 2\}$

9. The sum of the solutions of the equation $9^x - 6 \cdot 3^x + 8 = 0$ is

(A) $\log_3 2$ (B) $\log_3 6$ (C) $\log_3 8$ (D) $\log_3 4$

10. If sin θ and cos θ are the roots of the equation $ax^2 - bx + c = 0$, then

(A) $a^2 - b^2 = 2ac$ (B) $a^2 + b^2 = 2ac$ (C) $a^2 + b^2 + 2ac = 0$ (D) $b^2 - a^2 = 2ac$

11. The roots of the equation $x^2 - 2\sqrt{2}x + 1 = 0$ are

(A) real and different (B) imaginary and different

(C) real and equal (D) rational and different

12. The roots of the equation $(b + c)x^2 - (a + b + c)x + a = 0$ (a, b, c $\in$ Q, $b + c \neq a$) are

(A) irrational and different (B) rational and different

(C) imaginary and different (D) real and equal

13. If the roots of the equation $ax^2 + x + b = 0$ be real and different, then the roots of the equation $x^2 - 4\sqrt{ab}\,x + 1 = 0$ will be

(A) rational (B) irrational (C) real (D) imaginary

14. If $a < c < b$ then the roots of the equation $(a - b)^2 x^2 + 2(a + b - 2c)x + 1 = 0$ are

(A) imaginary (B) real

(C) one real & imaginary (D) equal & imaginary

15. The number of real solutions of $x - \frac{1}{x^2 - 4} = 2 - \frac{1}{x^2 - 4}$ is

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

16. Sum of roots of the equation $(x + 3)^2 - 4|x + 3| + 3 = 0$ is

(A) 4 (B) 12 (C) – 12 (D) – 4

17. If α, β are roots of the equation $x^2 + px - q = 0$ & γ, δ are roots of $x^2 + px + r = 0$, then the value of $(\alpha-\gamma)(\alpha-\delta)$ is

(A) p + r (B) p – r (C) q – r (D) q + r

18. If α, β are roots of $Ax^2 + Bx + C = 0$ and α^2, β^2 are roots of $x^2 + px + q = 0$ then p is equal to

(A) $\frac{B^2 - 4AC}{A^2}$ (B) $\frac{2AC - B^2}{A^2}$ (C) $\frac{4AC - B^2}{A^2}$ (D) None of these

19. If α, β are roots of the equation $x^2 - 5x + 6 = 0$ then the equation whose roots are $\alpha + 3$ and $\beta + 3$ is

(A) $x^2 - 11x + 30 = 0$ (B) $(x - 3)^2 - 5(x - 3) + 6 = 0$

(C) Both (A) and (B) (D) None of these

20. If α, β are the root of a quadratic equation $x^2 - 3x + 5 = 0$ then the equation whose roots are $(\alpha^2 - 3\alpha + 7)$ and $(\beta^2 - 3\beta + 7)$ is

(A) $x^2 + 4x + 1 = 0$ (B) $x^2 - 4x + 4 = 0$ (C) $x^2 - 4x - 1 = 0$ (D) $x^2 + 2x + 3 = 0$

21. The number of values of a for which $(a^2 - 3a + 2)x^2 + (a^2 - 5a + 6)x + a^2 - 4 = 0$ is an identity in x is

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

22. If a, b, be the roots of the equation $ax^2 - 35x + 2 = 0$ then the value of $(2a-35)^3(2b-35)^3$ is equal to

(A) 8 (B) 1 (C) 64 (D) None

23. If $(2x + 1)^2 - |2x + 1| - 6 < 0$, then

(A) $-1 < x < 2$ (B) $-2 < x < 1$ (C) $-2 < x < -1$ (D) $1 < x < 2$

24. If exactly one root of the quadratic equation $f(x) = ax^2 + bx + c = 0$ is at infinity then

(A) a tends to zero (B) b tends to zero (C) b must not be zero (D) Both (A) and (C)

25. If $(3-4\sin^2 1)(3-4\sin^2 3)(3-4\sin^2 3^2).....(3 - 4\sin^2(3^{n-1})) = \sin a/\sin b$, where $n \in N$ and $n>1$ & a, b are integers in radian, then the digit at the unit place of (a + b) cannot be-

(A) 4 (B) 1 (C) 8 (D) 2

Answers

RACE # 16

1.	(C)	**2.**	(C)	**3.**	(D)	**4.**	(C)	**5.**	(B)	**6.**	(A)	**7.**	(B)	**8.**	(D)	**9.**	(C)	**10.**	(D)
11.	(A)	**12.**	(B)	**13.**	(D)	**14.**	(A)	**15.**	(A)	**16.**	(C)	**17.**	(D)	**18.**	(B)	**19.**	(C)	**20**	(B)
21.	(C)	**22.**	(C)	**23.**	(B)	**24.**	(C)	**25.**	(B)										