ASSIGNMENT-1

AI24BTECH11026 - Pendem nitesh sri satya*

16) Let a, b, c be real numbers, a $\neq 0$. If α is a root of $a^2x^2+bx+c=0$. β is the root of $a^2x^2-bx-c=0$ and $0<\alpha<\beta$, then the equation $a^2x^2+2bx+2c=0$ has a root γ that always satisfies
(a) $\gamma= \frac{\alpha+\beta}{2}$ (1989 - 2*Marks*)
(b) $\gamma= \alpha+\frac{\beta}{2}$
(c) $\gamma= \alpha$
(d) $\alpha<\gamma<\beta$

17) The number of solutions of the equation $\sin(e)^x = 5^x+5^{-x}$ is
(a) 0 (1990 - 2 *Marks*)
(b) 1
(c) 2
(d) Infinitely many

18) Let α,β be the roots of the equation $(x-a)(x-b)=c$, $c \neq 0$ Then the roots of the equation $(x-a)(x-b)+c=0$ are
(a) a, c (1992 - 2 *Marks*)
(b) b, c
(c) a, b
(d) $a+c, b+c$

19) The number of point of intersection of two curves $y=2\sin x$ and $y=5x^2+2x+3$ is
(a) 0 (1994)
(b) 1
(c) 2
(d) ∞

20) If p, q, r are +ve and are in $A.P.$,the roots of quadratic equation $px^2+qx+r=0$ are all real for
(a) $\left|\frac{r}{p}-7\right| \geq 4\sqrt{3}$ (1994)
(b) $\left|\frac{p}{r}-7\right| \geq 4\sqrt{3}$
(c) all p and r
(d) no p and r

21) Let $p, q \in 1, 2, 3, 4$. The number of equations of the form $px^2+qx+1=0$ having real roots is
(a) 15 (1994)
(b) 9
(c) 7
(d) 8

22) If the roots of the equation $x^2-2ax+a^2+a-3=0$ are real and less than 3, then (1999 - 2 *Marks*)
(a) $a<2$
(b) $2 \leq a \leq 3$
(c) $3 < a \leq 4$p
(d) $a>4$

23) If α and β $(\alpha<\beta)$ are the roots of the equation $x^2+bx+c=0$, where $c<0<b$, then (2000*S*)
(a) $0<\alpha<\beta$
(b) $\alpha<0<\beta<|\alpha|$
(c) $\alpha<\beta<0$
(d) $\alpha<0<|\alpha|<\beta$

24) If a, b, c, d are positive real numbers such that $a+b+c+d=2$, then $M=(a+b)(c+d)$ satifies the relation (2000*S*)
(a) both roots in (a, b)
(b) both roots in (-∞, a)
(c) both roots in (b, +∞)
(d) one root in (-∞, a) and the other in (b, +∞)

25) If $b>a$, then the equation $(x-a)(x-b)$-1 = 0 has (2000*S*)
(a) both roots in (a, b)
(b) both roots in (-∞,a)
(c) both roots in $(b, +\infty$
(d) one root in $(-\infty, a)$ and the other in $(b, +\infty)$

26) For the equation $3x^2+px+3=0, p>0$, if one of the root is square of the other, then p is equal to (2000*S*)
(a) $\frac{1}{3}$
(b) 1
(c) 3
(d) $\frac{2}{3}$

27) If $a_1, a_2 ....., a_n$ are positive real numbers whose product is a fixed number c, then the minimum value of $a_1+a_2+.....+a_{n-1}+2a_n$ is (2002*S*)
(a) $n(2c)^{\frac{1}{n}}$
(b) $(n+1)c^{\frac{1}{n}}$
(c) $2nc^{\frac{1}{n}}$
(d) $(n+1)(2n)^{\frac{1}{n}}$

28) The set of all real numbers x for which $x^2-|x+2|+x>0$, is (2002*S*)
(a) (-∞,-2) ∪ (2,∞)
(b) $(-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)$

(c) $(-\infty, -1) \cup (1, \infty)$
(d) $(\sqrt{2}, \infty)$

29) If $\alpha \in (0, \frac{\pi}{2})$ then $\sqrt{x^2 + x} + \frac{tan^2\alpha}{\sqrt{x^2+x}}$ is always greater than or equal to (2003S)
(a) $2tan\alpha$
(b) 1
(c) 2
(d) $sec^2\alpha$

30) For all $'x'$,$x^2 + 2ax + 10 - 3a > 0$, then the interval in which $'a'$ lies is (2004S)
(a) $a < -5$
(b) $-5 < a < 2$
(c) $a > 5$
(d) $2 < a < 5$