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) $\gamma= \frac{\alpha+\beta}{2}$
(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
(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
(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
(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) $\left|\frac{r}{p} - 7\right| \geq 4\sqrt{3}$
(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 ogf equations of the form $px^2 + qx + 1 = 0$ having real roots is
(a) 15
(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
(a) $a < 2$
(b) $2 \leq a \leq 3$
(c) $3 < a \leq 4$
(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
(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
(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