

Date Planned : __ / __ / __	Daily Tutorial Sheet - 7	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration : _____

86. The number of roots of the equation $2^x + 2^{x-1} + 2^{x-2} = 7^x + 7^{x-1} + 7^{x-2}$ is :
(A) 4 **(B)** 2 **(C)** 1 **(D)** 0
87. The solution set of the equation $(\log_x 2)(\log_{2x} 2) = \log_{4x} 2$ is :
(A) $\{2^{-\sqrt{2}}, 2^{\sqrt{2}}\}$ **(B)** $\left\{\frac{1}{2}, 2\right\}$ **(C)** $\left\{\frac{1}{4}, 2^2\right\}$ **(D)** None of these
88. What is the solution set of the inequality $\left| \frac{x^2 - 5x + 4}{x^2 - 4} \right| \leq 1$? 
(A) $x \in \left[0, 2\right) \cup \left[\frac{5}{2}, \infty\right)$ **(B)** $x \in \left[0, \frac{8}{5}\right) \cup \left[\frac{5}{2}, \infty\right)$
(C) $x \in \left[0, \frac{8}{5}\right] \cup \left[\frac{5}{2}, \infty\right]$ **(D)** None of these
89. If $x \in R$, the least value of the expression $\frac{x^2 - 6x + 5}{x^2 + 2x + 1}$ is: 
(A) -1 **(B)** -1/2 **(C)** -1/3 **(D)** None of these
90. If $x \in R$, then range of $\frac{x^2 - x + 1}{x^2 + x + 1}$ is given by: 
(A) $(1/3, 3)$ **(B)** $[1/3, 3]$ **(C)** $(0, 3)$ **(D)** None of these
91. α, β are roots of the equation $\lambda(x^2 - x) + x + 5 = 0$. If λ_1 and λ_2 are the two values of λ for which the roots α, β are connected by the relation $\frac{\alpha}{\beta} + \frac{\beta}{\alpha} = 4$, then the value of $\frac{\lambda_1}{\lambda_2} + \frac{\lambda_2}{\lambda_1}$ is : 
(A) 150 **(B)** 254 **(C)** 180 **(D)** 1022
92. If $f(x) = x^2 + 2bx + 2c^2$ and $g(x) = -x^2 - 2cx + b^2$ such that $\min f(x) > \max g(x)$, then the relation between b and c , is :
(A) No real value of b and c **(B)** $0 < c < b\sqrt{2}$
(C) $|c| < |b|\sqrt{2}$ **(D)** $|c| > |b|\sqrt{2}$
93. For $\frac{|x-1|}{x+2} < 1$, solution set of x is given by: 
(A) $(-\infty, -2) \cup (-1/2, \infty)$ **(B)** $(-\infty, -1) \cup [2, 3]$
(C) $(-\infty, -4)$ **(D)** $[-1/2, 1]$
94. The number of pairs (a, b) for which $a(x+1)^2 + b(x^2 - 3x - 2) + x + 1 = 0 \forall x \in R$ is :
(A) 0 **(B)** 1 **(C)** 2 **(D)** infinite
95. The quadratic equation $\frac{(x+b)(x+c)}{(b-a)(c-a)} + \frac{(x+c)(x+a)}{(c-b)(a-b)} + \frac{(x+a)(x+b)}{(a-c)(b-c)} = 1$ has :
(A) Two real and distinct roots **(B)** Two equal roots
(C) Non-real complex roots **(D)** Infinite roots