UPES

Class Test 1

Programme Name : B.Tech	**Semester : III**
Course Name : Discrete Mathematical Structure	**Time: 40 Min.**
Course Code : CSEG2006	**Max. Marks:**
Nos. of page(s) : 1	**Batch: 23 &24**

Instructions: Do all questions.

S. No.		Marks	CO
Q 1	(a) Consider the following relation on {1,2,3,4,5,6} $$R = \{(i,j): |i-j| = 2\}$$ Is $'R'$ transitive? Is $'R'$ reflexive? Is $'R'$ symmetric?		
	(b) Let R be the binary relation defined as $$R = \{(a,b) \in R^2 : (a-b) \leq 3\}$$ Determine whether R is reflexive, symmetric, antisymmetric, and transitive.		
Q 2	Show that $\left[(p \vee q) \wedge \sim \left(\sim p \wedge (\sim q \vee \sim r)\right)\right] \vee (\sim p \wedge \sim q) \vee (\sim p \wedge \sim r)$ is tautology by using laws of logic.		
Q 3	Which elements of the poset $(\{2,4,5,10,12,20,25\}, |)$ are maximal and which are minimal.		
Q 4	If s is a valid conclusion from the premises $p \to q, p \to r, \sim(q \wedge r)$ and $s \vee p.$ If yes or no, justify		
Q 5	Let f and g be functions from the positive integers to the positive integers defined by $f(n) = n^2$, $g(n) = 2^n$. Find $(i) fof$, $(ii) gog$, $(iii) fog$, $(iv) gof$		