CS09 304 Discrete Computational Structures

Question Bank – Module II- Relations & Functions

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Topic	Question	Mark	Month &Year	Regulation
Function	Find the number of functions from m element set to an n element set.	5	2011	09
	Show that the function f: N x N → N defined by f(x,y) = x+ y is onto but not one one			
	If f: X→Y How many different functions are possible? How many different one to one functions are possible?	5	2011	09
	Let F be set of one to one functions from n element set to an m element set. Where m ≥ n ≥ 1. Find number of member functions of F. How many functions f in F satisfy the property f(i) =1 for some 1 ≤ i ≤ n ?	5	2010	09
	If A ={x€ R; x ≠ ½ } and f: A→R is defined by f(x) = $\frac{4x}{2x-1}$. Find the range of f	8	2009	04
	Explain inverse function	2	2012 2011	09
	Explain the following (i) one to one mapping (ii) onto mapping (iii)one to many (iv) many to one (v) composition of functions	10	2010	09
	If f: R→R is given by f(x) = 3x-7 find f^{-1}	5	2009	04
	If f: X→Y and g: Y→ Z and both f and g are onto show that g $_0$ f is onto. Is g $_0$ f one to one if f and g are one to one?	7	2010	04
Relation	Explain equivalence relation	2	2012 2011	09
	Let S = {(1,2) (2,1)} is a binary relation on set A ={1,2,3} Is it reflexive? Add minimum number of ordered pairs to S to make it an equivalence relation.	5	2010	09
	Find the number of symmetric relations that can be defined on a set with n elements.	5	2011	09
	Give an example for a relation which is symmetric and transitive but not reflexive on {a,b,c}	5	2012	09
	Define relation on a set and give an example	5	2009	04
	Let G = {(a,b):a ≠ 0, b € R} and * be a binary operation such that (a,b)*(c,d) = (ac, bc + d). Show that (G,*) is a group. Also show that it is non abelian.			
	If A = { 1,2,3,……7} and R = {x,y € A/ x- y is divisible by 3} show that R is an equivalence relation.			
	If R is a relation on the set of ordered pairs of positive integers such that (a,b),(c,d) € R whenever ad =bc. Show that R is an equivalence relation.	7	2009	04
Partial	Explain Partial order set or POSET	2	2010	09

order	If R is the relation on the set of integers such that (a,b) € R iff b = am for some positive integer m show that R is a partial ordering.	**7**	**2009**	**04**
Relation matrices	If R & S be relations on a set A represented by the matrices $M(R) = \begin{bmatrix} 0 & 1 & 0 \\ 1 & 1 & 1 \\ 1 & 0 & 0 \end{bmatrix}$ $M(S) = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ Find the matrices that represent S ○ R and R○S	**8**	**2009** **2008**	**04**
	Using adjacency matrix (Relation matrix) find the number of different reflexive relations on set A with n elements.	**5**	**2011**	**09**
	If R = {(x,2x) /x € I} and S = {(x,7x) /x € I} are two relations on a set of positive integers then find S ○ R and R○S and R○S○ R			