

Important Questions

Q-1) A) Solve the following.

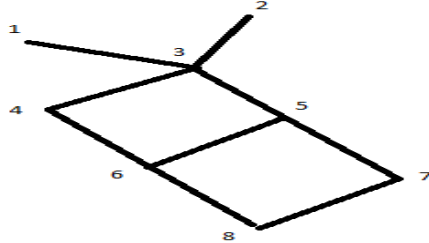
Let $A=\{1,2,3,4,5,6\}$ and $R=\{(1,1) (1,5) (2,2) (2,3) (2,6) (3,2) (3,3) (3,6) (4,4) (5,1) (5,5) (6,2) (6,3) (6,6)\}$. Find partition of A generated by equivalence classes of R.

1. Draw the Hasse diagram of $(P(x), \subseteq)$ where $x=\{a,b,c\}$

OR

A) Solve the following.

1. Let $S=\{1,2,3,4,5,6,7,8\}$ Find upper bound, lower bound, Sup A and Inf A for $A=\{2,3,6\}$



2. Let R be the relation on set N define by the equation $2x+4y=17$. Find R.

B) Solve the following.

1. let R be the relation from $X=\{1,2,3,4\}$ to $Y=\{a,b,c,d\}$ define by the relation $R=\{(1,a)(1,b)(3,b)(3,d)(4,b)\}$ find $A=\{x/xRb\}$
2. If (L, \leq) is a lattice then prove the distributive lattice.

$$a + (b * c) \leq (a+b) * (a+c)$$

OR

B) Solve the following.

1. Show that the lattice $S = 36$ is isomorphic to the direct product of the lattice for $n=9$ and $n=4$. And also check whether it is homomorphism or not.

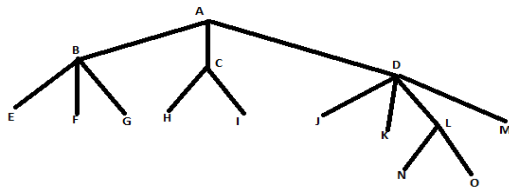
2. Show that the every chain is a distributive lattice for

Case 1: $a \leq b \leq c$

Case 2: $a \geq b \geq c$

Q-2) A) Solve the following.

1. Give binary representation of the following graph.



2. Show that in a complimented distributive lattice ,

$$a \leq b \Leftrightarrow a * b' = 0 \Leftrightarrow a' + b = 1 \Leftrightarrow b' \leq a'$$

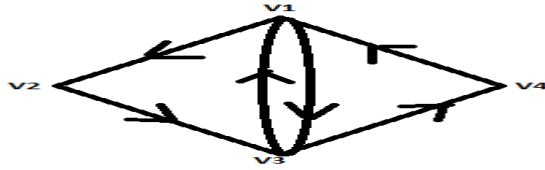
OR

A) Solve the following.

1. Let $(L, *, +, 0, 1)$ be a complimented distributive lattice. Then prove that

$$a * b = a * c \text{ and } a + b = a + c \Rightarrow b = c$$

2. Find radius and diameter.

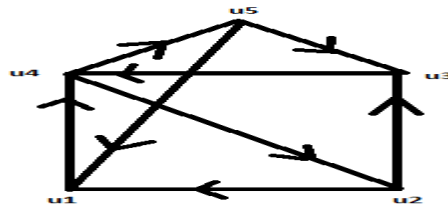
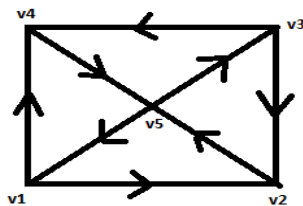


B) Solve the following.

1. Find path matrix of

$$\begin{matrix} 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 \end{matrix}$$

2. Show that the graphs are isomorphic or not.



OR

B) Solve the following.

1. Draw three regular graphs with seven vertices.
2. Give other three representation of $(v_0 (v_1 (v_3 (v_4)) (v_2 (v_5 (v_6 (v_7 (v_8))))))$

Q-3) Solve any Ten.

1. Find the number of relation from $A=\{a,b,c\}$ to $B=\{1,2\}$.
2. If the relation is reflexive, then all the diagonal entries of the relation matrix are ___.
3. Give the definition of compatibility relation.
4. Find minimal element of $S=\{2,4,6,12,20\}$.
5. Find all the complement of (S_3, D) .
6. What is Associative property?
7. What is isomorphism?
8. Is (S_{12}, D) a complemented lattice?
9. Give the definition of pendant vertex.
10. Total number of edges in complete directed graph is _____.
11. What is unilaterally connected graph?
12. Give the definition of m – ary tree.