Semester : III Subject : DSGT Academic Year: 2022-2023

(2) Bounded Lattice -

Consider a poset $(S, \leq)$

Definition: A partially ordered set $(S, \leq)$ is called a bounded lattice if it has the greatest element (1) and the least element (0).

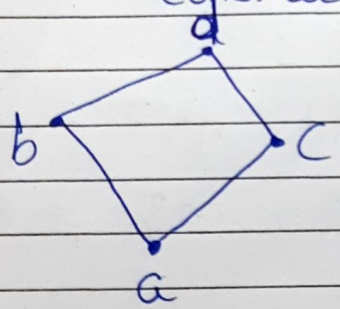
greatest element -

1 is called the greatest element if $\forall x \in S, x \leq 1$

least element (0) -

0 is called the least element if $\forall x \in S, 0 \leq x$.

e.g. (1) Consider the following hasse dia.



least element : a

aRb, aRc, aRd

$(a \leq b), (a \leq c), (a \leq d)$

greatest element : d

$d \geq b, d \geq c, d \geq a$

Both least & greatest elements exist in the above lattice.

Therefore, the given lattice is a bounded lattice.

* Every finite lattice has a least element & a greatest element.