PARSHVANATH CHARITABLE TRUST'S
A.P. SHAH INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering
Data Science

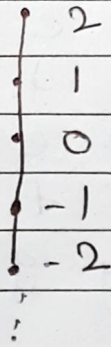Semester : __III__   Subject : __DSGT__   Academic Year: 2022-2023

* Types of lattices :—

1> Complete
2> Bounded
3> Isomorphic
4> Distributive
5> Complemented

① **Complete lattice —**

A lattice p is called as complete iff every non-empty subset of p has GLB & LUB.

e.g. poset $(z, \leq)$

```
  . 2
  . 1
  . 0
  . -1
  . -2
```

This is a poset $(z, \leq)$ with relation of ~~divisib~~ less than or equal to and its hasse diagram is shown in fig.

Suppose we have $S = \{x \in z \mid x \leq 0 \text{ and}$

$S = \{x \in z \mid x \geq 0 \text{ and } x < 2\}$

~~$S = \{0, 1, 2\}$~~
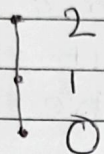
$S = \{0, 1, 2\}$

S is a finite set.

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so hasse diagram for poset $(z, \leq)$ of S

$S = \{0, 1, 2\}$

GLB $\wedge$	0	1	2
0	0	0	0
1	0	1	1
2	0	2	2

LUB $\vee$	0	1	2
0	0	1	2
1	1	1	2
2	2	2	2

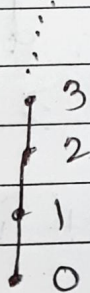S is a complete lattice.

but $S = \{x \in z \mid z \, x > 0\}$

x is all positive integers.

S is infinite set.

$S = \{1, 2, 3, 4, \ldots \ldots \infty\}$

here we can not get GUB for every pair of subset hence s is not a complete lattice.

as s is infinite set.