SMIT SIKKIM MANIPAL UNIVERSITY
SIKKIM MANIPAL INSTITUTE OF TECHNOLOGY

Engineering Mathematics III

Discrete Mathematics

Lecture 6

Partially Order set & Hesse Diagrams

This course is taught to Computer Science Engineering students in SMIT, India during Jun-Dec, 2019.

Partially Ordered Set (POSET)

- Set A together with a partial ordering relation $\mathcal{R}$ on A, is called a **partially ordered set** and its is denoted by $(A, \mathcal{R})$.
- It is also called as *poset*
- There is also an alternative notation for a poset, we represent $a\mathcal{R}b$ as $a \leq b$ under the relation $\mathcal{R}$ and so we represent $(A, \mathcal{R})$ as $(A, \leq)$.

Chain

A subset of A is called a **chain** if every two element in the subset are related.

You know what, because of anti-symmetry and transitivity every finite chain of n elements should be of the form

$$a_1 \leq a_2 \leq \cdots \leq a_n$$

Can you think, why it is?

Hesse Diagram

Questions?

Thank you