A

Webinar on

"Lattice and Algebraic System"

Organiged by

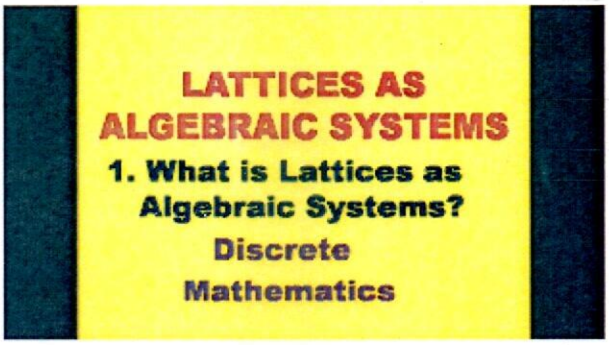
Department of Mathematics ,

Pattamundai College, Pattamundai

On

21st April 2022.

Session 2021-22



LATTICES AS ALGEBRAIC SYSTEMS

1. What is Lattices as Algebraic Systems?

Discrete Mathematics

REPORT

A webinar was organised by Department of Mathematics, Pattamundai College, Pattamundai on 21st April 2022 on the topic **"Lattice and Algebraic System"**. Dr Prayag Prasad Mishra, Professor of Mathematics, Silicon Institute of Technology, Bhubaneswar who graced the webinar with his analytical thinking. We were able to get the beautiful glimpses of the students of our Department in this webinar. Sri Arabinda Pandab, Head of the Department gave a key note address of the topic. Principal Prof Prabhakar Rout welcomed the guest and participants of different colleges of our state through web. The webinar was ended with a vote of thanks by Dr Nirmal Kumar Sahoo, another faculty member.

Arabinda Pandab

HOD& Convenor

OFFICE OF THE PRINCIPAL
Mobile : 9437376724

PATTAMUNDAI COLLEGE

NAAC ACCREDITED B+ GRADE
PATTAMUNDAI, KENDRAPARA, ODISHA - 754215

Ref No. : 397 *Date* 19/4/22

To

Dr Prayag Prasad Mishra ,
Professor of Mathematics,
Silicon Institute of Technology,
Bhubaneswar.

Sub: - An invitation as Resource Person in the State Level Webinar organized by Department of Mathematics on 21.04.2022.

Sir,

It is my pleasure to invite you as **Resource Person** in the State Level Webinar on the topic **"Lattice and Algebraic System"** to be organized by Department of Mathematics, at 12.15 pm on 21.04.2022 in our institution.

Your kind consent in this regard is highly solicited.

Yours Faithfully,
19-4-22
Principal
Pattamundai College

Principal
Pattamundai College

www.pattamundaicollege.ac.in,
E-mail : pattamundaicollege@gmail.com, pattamundaicollege@yahoo.com

Invitation for state level webinar

4 messages

Principal Pattamundai College <pattamundaicollege@gmail.com> Tue, Apr 19, 2022 at 12:26 PM
: Prayag Mishra <prayag@silicon.ac.in>
Cc: hr@silicon.ac.in

Pl find the attachment
Principal
Pattamundai College
pattamundaicollege@gmail.com

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Action: failed
Status: 5.1.1
Diagnostic-Code: smtp; 550-5.1.1 The email account that you tried to reach does not exist. Please try
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 550 5.1.1  https://support.google.com/mail/?p=NoSuchUser 8-20020a6b0108000000b0064d2b7ef7afsor2978955iob.45 - gsmtp
Last-Attempt-Date: Mon, 18 Apr 2022 23:57:02 -0700 (PDT)
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Cc: hr@silicon.ac.in
Bcc:
Date: Tue, 19 Apr 2022 12:26:48 +0530
Subject: Invitation for state level webinar
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Prayag Mishra <prayag@silicon.ac.in> Tue, Apr 19, 2022 at 1:53 PM
: Principal Pattamundai College <pattamundaicollege@gmail.com>

Dear sir,
Thank you for your invitation. I am honoured to be a part of this webinar.

Regards
Dr prayag prasad mishra
Professor in mathematics.
[Quoted text hidden]

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Dr. Prayag Prasad Mishra, Ph.D.

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(JOINED THE INSTI TUTE IN 2001)

RESEARCH INTERESTS

Differential equation, Delay differential equation, Algebra

Academic Qualifications:

Ph. D. (Mathematics), Utkal University, India
M.Phil (Mathematics), Utkal University, India
M. Sc. (Mathematics) Utkal University, India
Specialisation: Numerical Analysis, Differential equation, Linear Algebra.

Teaching Experience:

20 years in teaching Engineering Mathematics, Discrete Mathematics, Complex Analysis, Numerical Analysis, Probability & Statistics.

Research Experience: 10 years in the field of Delay Differential equation.

PUBLICATIONS

JOURNAL:

1- Title: – "NON- OSCILLATORY BEHVIOUR OF HIGHER ORDER FUNCTIONAL DIFFERENTIAL EQUATIONS OF NEUTRAL TYPE" Electronic Journal of differential equations, Vol. 2007 (2007), No. 163, pp. 1-14. USA, Texas state University.

2- Title:- "NON-OSCILITORY CRITERIA FOR A CLASS OF SECOND ORDER NON-LINEAR FORCED NEUTRAL- DELAY DIFFERENTIAL EQUATIONS" Mathematica Slovaca 59 (2009), No.4, 1-14, Czechoslovakia.

3 – Title: - "ON OSCILLATION AND ASYMPTOTIC BEHAVIOUR OF A NEUTRAL DIFFERENTIAL EQUATION OF FIRST ORDER WITH POSITIVE AND NEGATIVE COEFFICIENTS" Electronic Journal of differential equations, Vol. 2007 (2007), No. 01, pp. 1-7. USA, Texas state University

4 – Title: - "BOUNDED OSCILLATION AND CONVERGENCE OF SOLUTION IN A NEUTRAL DIFFERENTIAL EQUATION WITH OSCILLATING CO-EFFICIENTS Journal of Indian Mathematical Society, Vol 76, No.1-4(2009),141-150

5- Title: - "OSCILLATORY BEHAVIOUR OF SOLUTIONS OF A NON-LINEAR DELAY DIFFERENTIAL EQUATION OF NEUTRAL TYPE". Journal of the Orissa Mathematical Society, Volume 26, No 1&2 (2007), pp.45- 55.

6 – Title:-"OSCILLATION AND CONVRGENCE OF BOUNDED SOLUTIONS OF A CLASS OF HIGHER-ORDER NEUTRAL DELAY DIFFERENTIAL EQUATIONS" JOMS, vol.30, No.1(2011),p.35-51

ANYOTHER

CONFERENCES:

1. Necessary and sufficient conditions for the Oscillatory behavior of Solutions of a non-linear neutral differential Equations. National Conference on Mathematics at Berhampur University (22nd December 2010)

2 – UGC Sponsored conference on "Mathematical method in science and engineering computation" February 2007. 3 – 38th annual conference of OMS in 2010 4 – 40th annual conference of OMS in 2012

SHORT TERM COURSE:

1- Title: - "DECISION MAKING TOOLS IN ENGINEERING" IIT, Kharagpur-December 11-24, 2006.
2- Title:- " MATHEMATICAL TECHNIQUES IN SCIENCE AND ENGINEERING" IIT, Guwahati – June 26-30, 2006.
3- Title: - Short term course on complex analysis at NIT, Karnataka, June 2007.

Student Guidance:

Ph. D. - Guiding **01** student for completion of Ph.D. at BPUT, Odisha

DEPARTMENT OF MATHEMATICS
PATTAMUNDAI COLLEGE

Pattamundai, Kendrapara, Odisha

In association with

Internal Quality Assurance Cell (IQAC)

Organizes:

A STATE LEVEL WEBINAR ON

"**LATTICE & ALGEBRAIC SYSTEM**"

On 21st April 2022 at 12.15 pm

Platform : Zoom Meeting App and YouTube live

Resource Person :
Dr. Prayag Prasad Mishra
Professor of Mathematics
Silicon Institute of Technology,
Bhubaneswar

Prof. Prabhakar Rout
Principal
Pattamundai College

Convenor:
Mr . A Pandab
HOD, Mathematics
Pattamundai College

Co Convenor :
Dr N K Sahoo
Lecturer in Mathematics
Pattamundai College

IQAC Co-ordinator
Dr. Sunil Kumar Pradhan
Reader in Chemistry
Pattamundai College

Registration link : https://forms.gle/7FhDnAVYohc7cmZ77

No registration fee

E-certificate to all participants

A
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"Lattice and Algebraic System"
Organiged by
Department of Mathematics ,
Pattamundai College, Pattamundai
On
21st April 2022.
Submitted by: Dr. Prayag Prasad Mishra

Partial order relation

- A binary relation R defined on a set A is called a partial order relation if it is Reflexive, Anti-symmetric and Transitive.

  Ex. The relation divides in the set of Natural numbers.

Partial order set

- A set in which a partial order relation is defined is called a partial order set.

  Ex. Power set of a set under the relation subset.

Hasse-diagram

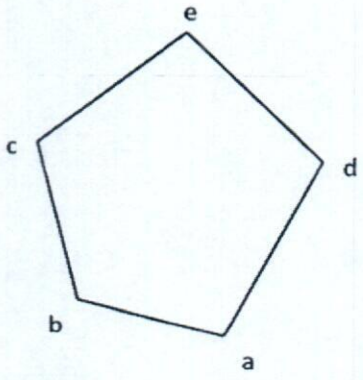
- Every poset can be represented in the form of a diagram called Hasse-diagram.

  Ex. Let A = {a,b,c,d,e} be a set.

  Let R = {(a,a), (b,b), (c,c), (d,d), (e,e), (a,b), (a,c),
  (b,c),(c,e)(b,e), (a,d),(a,e)}

  Clearly R is a partial order relation defined on A.

Hasse-diagram



Lattice

- A poset is called a lattice if every two elements of the poset have a unique Lub(Least upper bound) and unique Glb(Greatest lower bound).

Algebraic system

- A set along with one or two binary operations defined on it is called an Algebraic system.
- Example: Set of integers under addition.
- Every Lattice can be defined by an Algebraic system and vice versa.

Cont.

- The algebraic system defined by a lattice is expressed with two binary operations called Lub and Glb. Also they are named as sum and meet operations respectively.

Examples

The Algebraic system defined by a lattice (A, subset) with A = {a,b,c} is (A, Join, Meet). Where join operation means union and meet operation means intersection.

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Attendance Webinar on "Lattice and Algebraic System" Organiged by Department of Mathematics ,Pattamundai College, Pattamundai On 21st April 2022.

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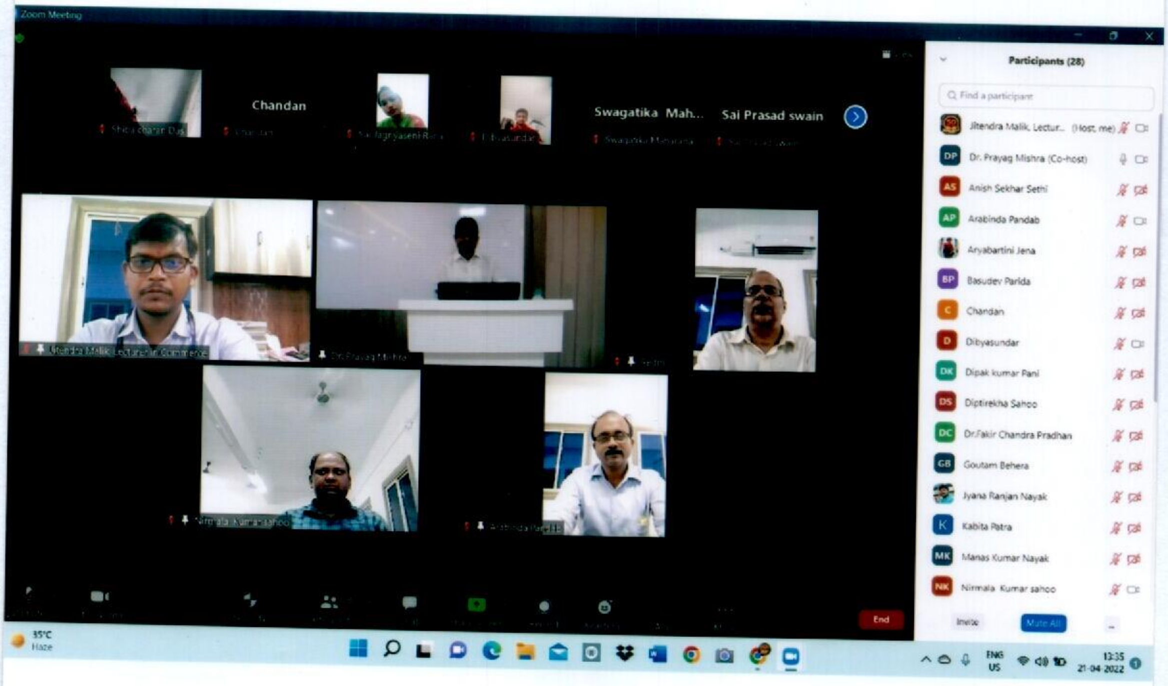
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Dr.Fakir Chandra Pradhan
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Nirmala Kumar sahoo
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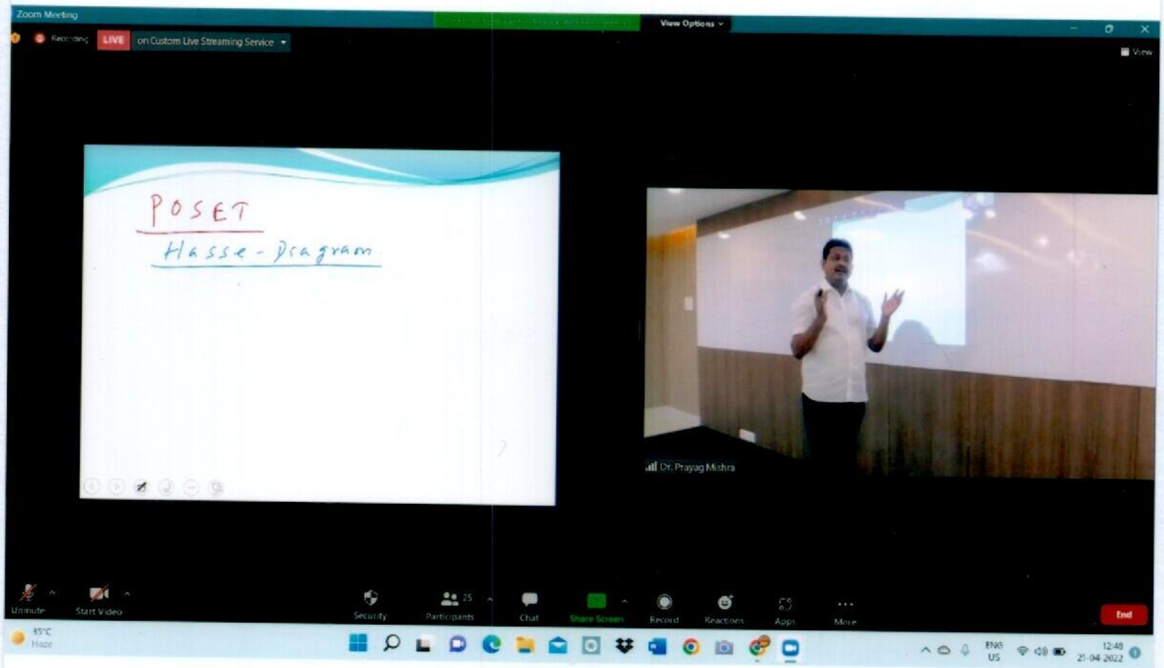
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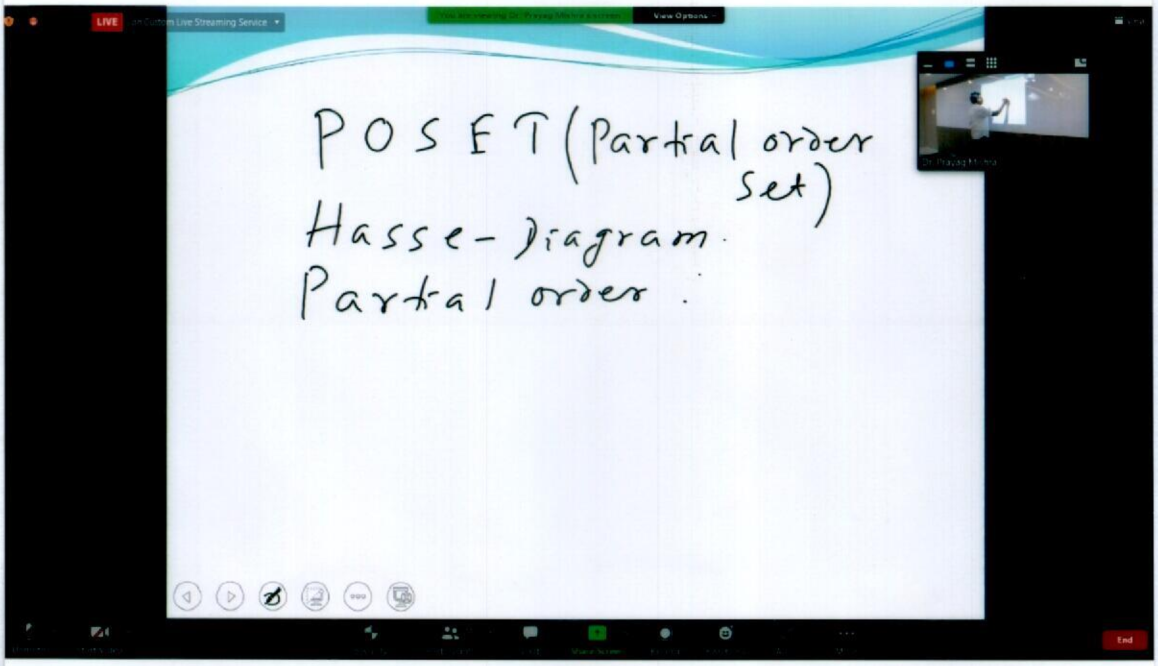

POSET (Partial order set)

Hasse-Diagram.

Partial order.

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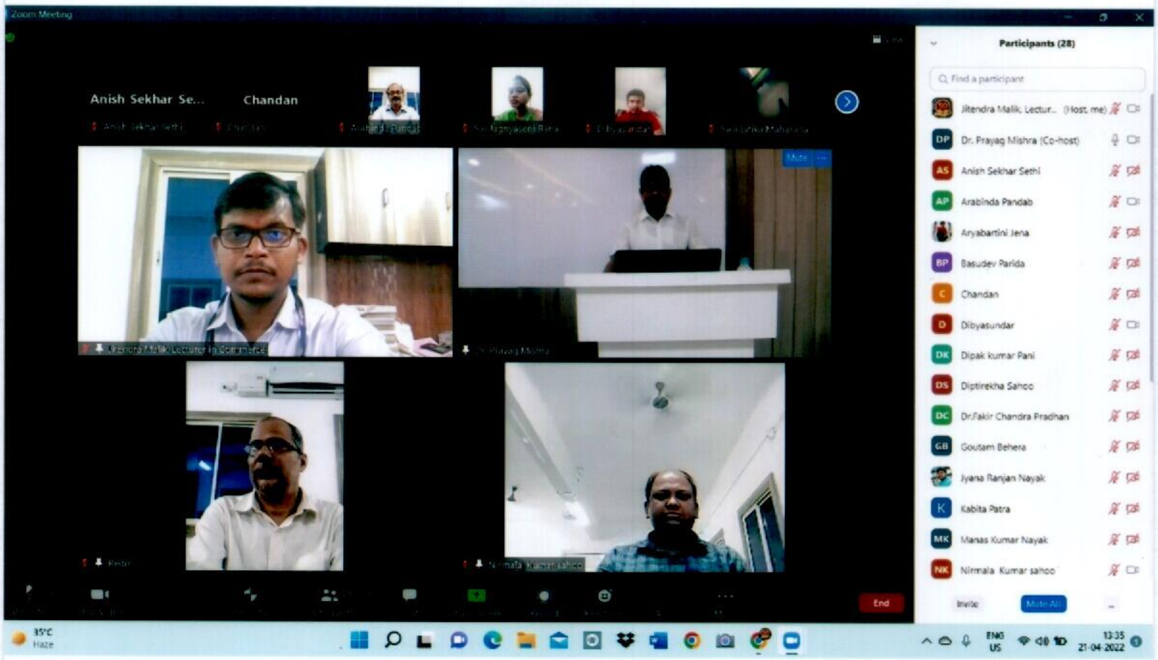

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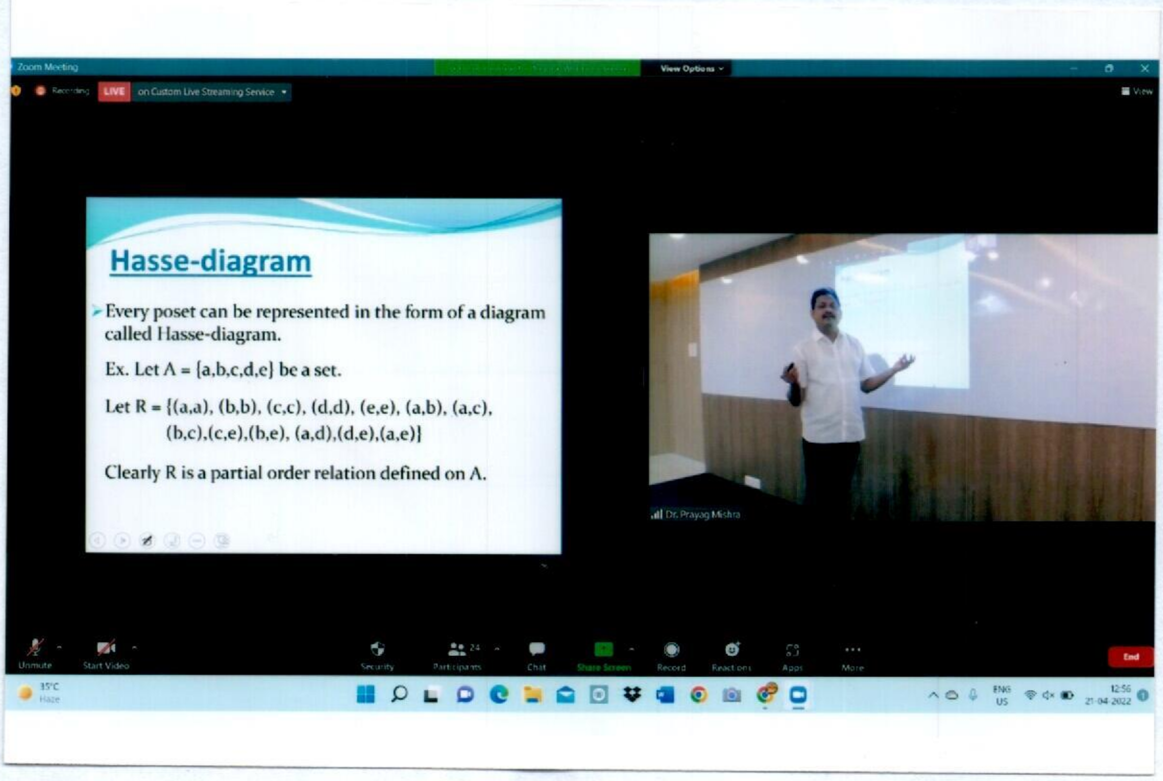
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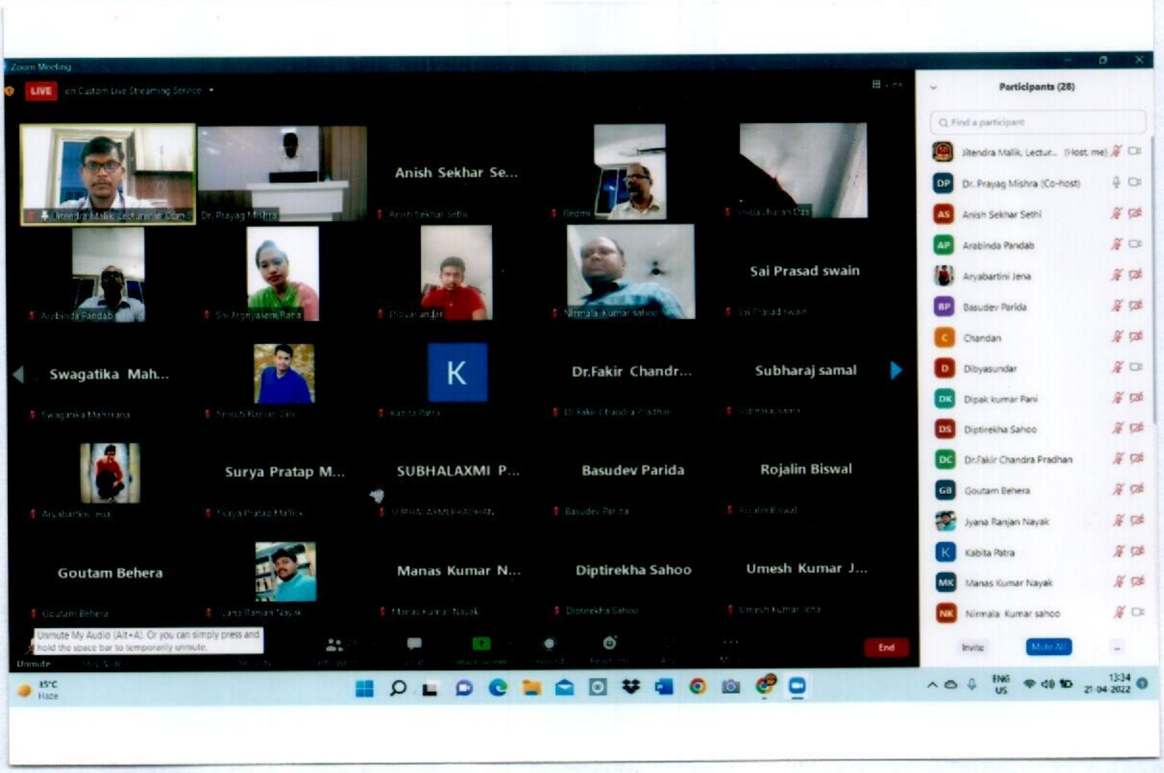
Hasse-diagram

- Every poset can be represented in the form of a diagram called Hasse-diagram.

Ex. Let A = {a,b,c,d,e} be a set.

Let R = {(a,a), (b,b), (c,c), (d,d), (e,e), (a,b), (a,c), (b,c),(c,e),(b,e), (a,d),(d,e),(a,e)}

Clearly R is a partial order relation defined on A.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Dibyasundar
Nirmala Kumar sahoo
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