Seat No.

OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Discrete Mathematical Structures

Sub. Code: 114460/112910

Day and Date: Tuesday ,16-12-2025 **Total Marks: 60**

Time: 02:30 PM To 05:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**

Special Inst.: **Question no. 01 & 05 is compulsory.**
Answer any TWO questions from Q. No. 02 to Q. No. 04 .

Q1) Solve any Three questions from following. (Each question carry 05 Marks) **[15]**

a. Write following statement in symbolic form **[5]**

a. Indians will win the world cup if their fielding improves.
b. If I am not in a good mood or I am not busy then I will go for a movie
c. If you know object oriented programming and oracle then you will get a job.
d. I will score good marks in the exam if and only if I study hard

b. Define a set. Explain different operations on a set. **[5]**

c. A={1,2,3,4,5} B={1,2,3,4,8} c={1,2,3,5,7} Find A+(B∩C) **[5]**

d. Explain following relations are equivalent or not on set A= {1,2,3,4,5} **[5]**

a. R1= {(a,b) | a-b is even}
b. R2= {(a,b) | a-b is an positive integer}

Q2) Solve the following questions. (All questions are compulsory) **[15]**

a. Explain which of the following set satisfy the closure property for Algebraic System <I, +, X> **[8]**

a. I= Set of all even integers
b. I= Set of all positive integers
c. I= Set of all negative integers

b. Let N be the set of Natural Numbers. Show that <N, +> and <N, ×> are monoids **[7]**

Q3) Solve the following questions. (All questions are compulsory) **[15]**

a.

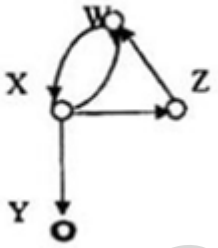
Explain the following terms of Lattice **[8]**

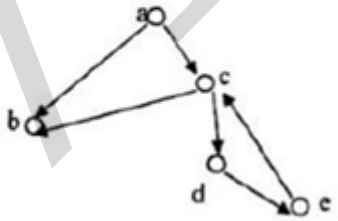
a. Lower bounds
b. Upper Bounds
c. Greatest Lower Bound
d. Lowest Upper Bound

b. Explain Boolean Algebra with example. **[7]**

Q4) Solve the following questions. (All questions are compulsory) **[15]**

a. Explain storage representation for the following graphs **[8]**





b. Define the following with example:- **[7]**
I) Strongly connected graph.
II) Weakly connected graph.
III) Unilaterally connected graph.

Q5) Solve the following questions. (All questions are compulsory) **[15]**

a. Explain the following terms in detail **[5]**
I) Isomorphic graph
II) Elementary path and Elementary cycle

b. What is Lattice? Explain the properties of Lattice. **[5]**

c. Define Algebraic system. Explain closure property of Algebraic system with example **[5]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (114460) Discrete Mathematical Structures Part 2 SEM 3

2] (11731) Bachelor of Technology (NEP-2.0) (112910) Discrete Mathematical Structures Part 2 SEM 3