30/5/24

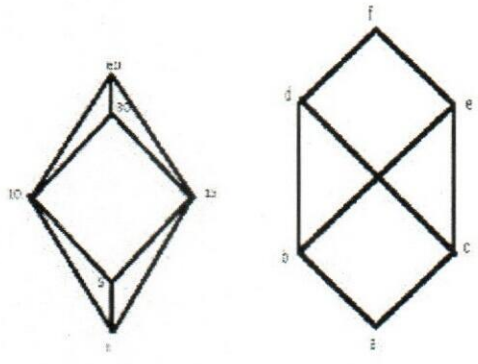
DOON UNIVERSITY, DEHRADUN
END Semester Examination, 2024 Semester, 2024
Academic Year 2023-24 (Even Semester)
School of Technology Department Name: Computer Science
Programme Name: B. Tech (CSE)/ B.Sc (Computer Science)
Course Code with Title: CEC152/ CSC152, Discrete Mathematics

Time Allowed 2:00 Hours ***Maximum Marks: 50***

SECTION: A

Note: (Each question carry 3 marks).

1. What is the difference between linearly ordered set and well-ordered set?
2. Define isomorphic ordered sets in detail?
3. What is Group? Define with an example?
4. What is the difference between Complemented lattice and Distributed lattice? Explain with an example.
5. We have a graph that has edges 35, 4 vertices of degree 5, 5 vertices of degree 4 and 4 vertices of degree 3. Find out number of vertices with degree 2 in the graph?
6. Find UB(B), LUB(B), LB(B), GLB(B) of the following graph if B = {10,15}, B={d,e}, B={b,c}?



SECTION: B

Note: (Each question carry 4 marks).

1. What is POSET? Define Hasse diagram of POSET, if a POSET is ({1,2,3,4}, ≤) then convert it into Hasse diagram.
2. Let R be a relation on set {1,2,3,4} with R= {(1,1), (1,4, (2,3), (3,1), (3,4)}. Find the reflexive, symmetric and transitive closure of R?
3. Explain Bounded lattice with its properties.
4. Define Dijkstra algorithm with example?
5. What is Topological Sort? Explain with an example.

SECTION: C

Note: (Each question carry 6 marks).

1. What is Spanning tree? Define Prim's algorithm and Kruskal algorithm with an example.?
2. Solve $a_{n+2} - 2a_{n+1} + a_n = 2^n$ *where* $a_0 = 2, a_1 = 1$ by using generating function.