Roll No. RU2300201

Total No. of Questions : 6] [Total No. of Printed Pages : 4

EW-169

B.E. IIIrd Semester (New Scheme) CSE

Examination, 2021-22

Discrete Structure

Paper - CS-305

Time : 3 Hours] **[Maximum Marks : 60**

Note :- Attempt all questions. Internal choices are given between questions Que. 2 to Que. 6.

1. Explain the following terms in brief. 2×5=10

(a) Set identities

(b) Relations

(c) Eulerian Circuit

(d) Recurrence Relation

(e) Integral Domain

2. Define the following basic logic operations along with truth table. 10

(a) Conjunctions ($\wedge$)

(b) Disjunctions ($\vee$)

(c) Negation ($\sim$)

(d) Conditional ($\Rightarrow$)

OR

Explain inclusion exclusion principle in discrcte structure. Also write down inclusion/exclusion example and explain why is inclusion/exclusion principle used?

3. Discuss the properties that a binary relation may have what is meant by partial ordering relation? 10

OR

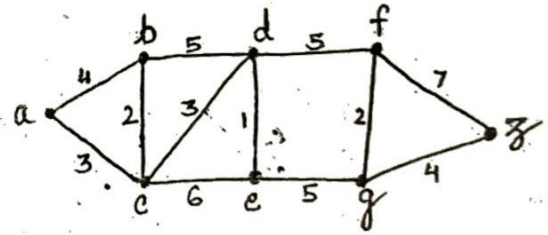
What are functions. Explain various types along with the properties of functions.

4. Explain the following terms : 10

Euler path, Adjacency matrix, Incidence matrix and Bipartite graph.

OR

Define shortest path, find the length of a shortest path between a and z in the given weighted graph, using Dijkstra's algorithm.



5. How do you solve recurrence relation. State types of recurrence relation. Also write down the recurrence relation used in Strassen's algorithm? 10

OR

What is meant by complexity of an algorithm? What are the types of algorithm in discrete structure? Also explain how the complexity of an algorithm is calculated.

6. Let ({a, b}, *) be a semi-group where a * a = b, show that : 10

(i) a * b = b * a

(ii) b * b = b

OR

Define the following with examples :

Distributive lattice, Boolean lattice and Boolean algebra.

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