Roll No. ....

Total Pages : 2

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33114

DISCRETE STRUCTURES

Paper : IT-209(N)

Group : (II)

Opt. : (II)

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) What is a Venn Diagram? Why Venn diagrams are.useful?   5

   (b) Explain Predicates and Quantifiers with the help of suitable examples.   10

2. (a) Define the following terms in context to set theory and give examples : empty set, power set, Cartesian Product, Union, intersection, compliment.   12

   (b) Write a short note on laws of logic.   3

UNIT–II

3. (a) Explain Transitive closure and Warshall's algorithm. 8

   (b) Describe the role of Posets and Hasse diagrams.   7

4. (a) Describe with example the computer representation of relations and diagraphs.   8

   (b) What is partial relation?   2

   (c) What is equivalence relation explain with example? 5

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UNIT–III

5. (a) What do you mean by Recurrence relations ?   3

   (b) A coin is tossed 3 times. Find out the number of possible outcomes.   5

   (c) Explain the types of functions with suitable examples.   7

6. (a) Explain Pigeon hole principle.   8

   (b) Write a short note on Principle of inclusion and exclusion.   7

UNIT–IV

7. (a) Explain the following with suitable examples :

   (i) Semi groups.

   (ii) Monoids.

   (iii) Cyclic groups.

   (iv) Normal subgroup.   12

   (b) What do you understand by Ring homomorphism?   3

8. Discuss the following with suitable examples :

   (a) Isomorphism.

   (b) Homomorphism.

   (c) Automorphism.   15

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