Roll No						

Total No. of Pages : 02

Total No. of Questions : 09

M.Sc (IT) (Sem.-3) DISCRETE STRUCTURES AND OPTIMIZATION Subject Code : PGCA-1917 M.Code : 93337 Date of Examination : 10-01-2023

Time: 3 Hrs.

Max. Marks: 70

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION B & C. have FOUR questions each.
- 3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
- 4. Select atleast TWO questions from SECTION B & C.

SECTION-A

- l. Define the Following :
 - a) General identities of sets
 - b) Properties of Functions
 - c) Hashing functions
 - d) Quotient rings
 - e) Integral domains
 - f) Logic Implications
 - g) Pigeon hole Principle
 - h) Groups
 - i) Homomorphism
 - j) Trees

SECTION-B

- 2. Give two examples of recurrence relation. Write steps to solve any linear recurrence relation.
- 3. Explain the various concepts involved in Logic Gates.
- 4. How many numbers are there between 99 and 1000, having atleast one of their digits 7?
- 5. Discuss the various properties of Hashing functions using suitable examples.

SECTION-C

- 6. Differentiate between cyclic semigraphs and submonoids using suitable examples.
- 7. Explain the cut vertex, cut edge and cut set with respect to connected graphs.
- 8. Discuss the various conditions for graph isomorphism in detail. What are its applications?
- 9. What are Hamiltonian chains? Give details of congruence relations on semigroups.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.