Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CSE) (Sem–4)

DISCRETE STRUCTURES

Subject Code : BTCS-402

M.Code : 71106

Date of Examination : 10-06-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

a) Define reflexive closure.

b) What is Poset?

c) List two applications of recurrence relation.

d) Define semi group.

e) Differentiate between path and trail.

f) What is chromatic number?

g) What is graph homomorphism?

h) List two applications of generating functions.

i) What is Coset?

j) Define Sum Of Products (SOP) form.

SECTION-B

2. Determine the numbers of integers between 1 and 260, which are divisible by any of the integers 2, 3, 5, 7.

3. Prove that a field is an integral domain.

4. In how many ways can 5 male and female be seated on round table so that no two ladies are together?

5. Prove that a given connected graph G is an Euler graph if all vertices of G are of even degree.

6. Draw a graph which contains an Euler Circuit but not hamilton circuit.

SECTION-C

7. Show that the edge chromatic number of a graph must be at least as large as the maximum degree of a vertex of the graph.

8. Consider the group G ={1,5,7,11,13,17} under multiplication modulo 18.

   a) Build the multiplication table of G.

   b) Finds $5^{-1}, 7^{-1}, 17^{-1}$

   c) Identify whether G is cyclic.

   d) Find the order and group generated by 5 and 13.

9. Solve the recurrence relation $a_n = 4a_{n-1} - 4a_{n-2} + (n + 1) + 2^n$.

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