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

Total No. of Questions : 18

B.Tech. (CSE/IT) (Sem.–4)

DISCRETE STRUCTURES

Subject Code : BTCS-402

M.Code : 71106

Date of Examination : 12-07-22

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

Answer briefly :

1) In degree

2) Ring

3) Directed Graph

4) Euler circuit

5) Ordered set

6) Chromatic number

7) Equivalence relation

8) Postfix notation

9) Surjection

10) Semi group.

SECTION-B

11) Show that the intersection of the two left ideals of a ring is again a left ideal of a ring.

12) Solve the recurrence relation, $a_n + 5a_{n-1} + 6a_{n-2} = 3n^2 - 2n + 1$.

13) Explain the following with example Homomorphism and Isomorphism.

14) Consider G = {1, 5, 7, 11} under multiplication modulo 12 is G cyclic? Also, find all subgroups of G.

15) Prove that a graph G with e = v -1 that has no circuit is a tree.

SECTION-C

16) Write detailed note on :

Cut Points, Simple Graphs, Multigraphs.

17) Define minimum spanning tree. Explain Prim's algorithm to find minimum spanning tree.

18) Prove that the sum of all degree of all the vertices in a graph is equal to twice the number of edges in a graph.

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.