Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (CSE/IT) (2012 Onwards) (Sem.–4)

DISCRETE STRUCTURES

Subject Code : BTCS-402

M.Code : 71106

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) Demorgan's Law

2) Chromatic number of K_n graph (Complete Graph)

3) Group

4) B-Tree

5) Heaps

6) Complexity of binary search

7) Find distinct number permutations formed from all letters of word "ENGINEERING"

8) Simple graph

9) Total order relation

10) Commutative Ring

SECTION-B

11) How many bit strings of length 8 either start with 1-bit or ends with two bits 00?

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

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

14) Prove that a connected graph G is Eulerian if and only if all vertices are of even degree.

15) Prove distributive law for sets.

SECTION-C

16) Describe cut point, spanning tree and bridges each with example

17) Show that union of two subgroups is a subgroup if and only if one is contained in other.

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

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.