

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.