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

Total No. of Questions : 18

B.Tech.(ECE) (2018 Batch) (Sem.–4)

DATA STRUCTURES AND ALGORITHMS

Subject Code : BTCS-301-18

M.Code : 77567

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

Write briefly :

1) What is a circular queue and its use?

2) List out the different types of Hashing Functions.

3) What is a top pointer of stack?

4) Define the term Priority queue.

5) Describe Big O Notation used in algorithms.

6) Write briefly on AVL Tree.

7) State Data structure versus data types.

8) What is the complexity of insertion sort?

9) What is Breadth First Search?

10) Write short note on Hashing.

SECTION-B

11) Explain the linked representation of a circular queue and operations to be performed on it with help of suitable example.

12) Discuss some of the common operations that can be performed on data structures by taking suitable example.

13) Define B-trees and their applications. Explain various operations used for balancing a binary tree with the help of a suitable example.

14) Consider the following numbers are stored in an array A: 32, 51, 27, 85, 66, 23, 13, 57. Apply Bubble sort algorithm to the array A and show each pass separately.

15) What are the various operations possible in stack? Explain the algorithm each of them.

SECTION-C

16) a) Write an Algorithm to insert new node at the middle of a Singly Linked List.

    b) Write an algorithm to implement Quick sort. Write the steps to sort the following elements by quick sort method: 17, 28, 6, 87, 46.

17) a) What is a Hash Table? Discuss the concept of collision resolution in hash table with the help of suitable example.

    b) What is Graph? Describe in brief the various methods used to represent Graphs in memory.

18) Let there be two Polynomials A and B of your Choice. How the addition of those two polynomials will take place? Show it diagrammatically and write an algorithm for the same.

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.