Roll No. ..... Total Pages : 3

301302

December, 2019

B.Tech. (CE/CSE/IT)-III SEMESTER

Data Structures & Algorithms (PCC-CS-301)

Time : 3 Hours] [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) What do you mean by an Algorithm? Explain the concept of time and space complexity. (1.5)

(b) What do you mean by sparse matrix. Show its representation using array. (1.5)

(c) What would be the complexity of insertion sort if elements are stored randomly and if elements are stored in ascending order? (1.5)

(d) Write down the advantages of linked lists over arrays. (1.5)

(e) Write applications of stacks and queues. (1.5)

(f) What do you mean by Priority Queue? (1.5)

(g) What would be the complexity of bubble sort if elements are stored randomly and if elements are stored in ascending order? (1.5)

(h) What do you mean by Minimum Spanning Tree? (1.5)

(i) Write down in brief about traversal techniques of Tree. (1.5)

(j) What do you mean by B+ Tree? (1.5)

PART - B

2. (a) Write an algorithm to search element using Binary search and explain it with the help of an example. (10)

(b) Write an algorithm to sort elements using selection sort. Explain it with the help of an example. (5)

3. (a) Write an algorithm to insert, delete and display elements in Circular queue. (10)

(b) Write an algorithm to insert, delete and display elements in one way list. (5)

4. Write an algorithm to sort elements using Quicksort. Explain it with the help of an example. (15)

5. (a) What do you mean by stack? Implement stack using linked list. (10)

(b) Write an algorithm to convert infix expression to postfix expression. (5)

6. (a) Write an algorithm to create and display binary tree. Explain it with an example. (10)

(b) What do you mean by hashing? Explain collision resolution methods. (5)

7. Write Short notes on the following :

(a) Depth First Search.

(b) AVL Tree.

(c) Threaded Binary Tree. (15)