

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CSE/IT) (Sem.-3)

DATA STRUCTURES

Subject Code : BTCS-304 (2011 Batch)

Paper ID : [A1126]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION 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 has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What are the front and rear pointers of queue?
- b) What is the best and average case of binary search?
- c) What is a top pointer of stack?
- d) What is need for Garbage collection?
- e) What is a degree of a graph?
- f) How a binary tree can be represented as array structure?
- g) How a heap can be created?
- h) What is breadth first search?
- i) What is traversal method of a threaded binary tree?
- j) How set is represented in memory?

SECTION-B

- 2) Explain the following Sorting algorithm :
 - I) Bubble sorting
 - II) Radix sorting
- 3) What is a threaded Binary Tree? How this type of tree helps in traversal?
- 4) Suppose the names of few students of a class are as below :

Ram, Sham, Mohan, Sohan, Vimal, Komal

It is assumed that the names of the students is represented as a single link list. Write a algorithm/program to insert the name of a student Raman between sham and Mohan. Represent it graphically also

- 5) How minimal spanning tree for a graph is generated? Explain with an algorithm.
- 6) What are the various operations possible on stacks? Explain the algorithm for each of them.

SECTION-C

- 7) Suppose a sequence of numbers is given like :

5, 10, 12, 18, 56, 68, 52, 85, 95

 - a) What are the various steps in which the number 52 will be found by the Binary search?
 - b) In how many steps the number 52 will be found in the linear search?
 - c) In how many steps it will be found in the binary search that the number 83 does not exist in this array.

Explain the algorithm involved in each of the problems a, b , c.

- 8) 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.
- 9) Design an algorithm to find out if the binary tree is
 - I) Strictly binary
 - II) Complete