BT-3/D-20   43159

DATA STRUCTURES

PC-IT-205A

Time : Three Hours]   [Maximum Marks : 75

Note : All questions in Part A and Part B are compulsory. Attempt any *four* questions from Part C, selecting *one* question from each Unit.

Part A

1. (i)   Define Array.
   (ii) Enlist various applications of queues.
   (iii) Provide examples of doubly linked list.
   (iv) State the major advantages of threaded tree.
   (v)   Define Indirected and Directed graphs.   5×3=15

Part B

2. Explain bubble sort using suitable example and algorithm.   5

3. How push and pop operation is implemented in stacks ? 5

4. Distinguish between circular linked lists and one way linked list. Also provide suitable examples for each.   5

5. Analyze and explain graph tree traversal using any one technique.   5

Part C

Unit I

6. Suppose you are given with data which is almost sorted. You have to search an element from the data. Which technique is the best and which is worst to search from the data and why ? Also write and explain the algorithm to search the data using the technique you think is the best.   10

7. Suppose you are having a one-dimenstional array. How can you delete an element in an array (i) at any given position (ii) when you are provided with data to be deleted and not the position ? Write algorithm for performing these and explain using suitable examples. 10

Unit II

8. How can you convert an infix expression to postfix expression and evaluate the postfix expression ? Write algorithms and explain using suitable examples.   10

9. Analyze and write the algorithms for inserting and deleting an element in a circular queue and explain using suitable examples.   10

Unit III

10. Write and explain the algorithm to insert an element in a sorted linked list. Also explain the advantages of a sorted linked list.   10

11. Write and explain the algorithm for inserting and deleting an element in a queue using linked list.   10

Unit IV

12. Define m-way search tree. How can you search, insert and delete an element from a m-way tree ? Explain using suitable examples for each possible case.   10

13. Discuss the various ways to find minimum spanning tree. Explain any *one* technique by writing its algorithm and using suitable examples.   10