

Roll No.

Printed Pages : 2

33002

BT-3 / D-17

DATA STRUCTURES

Paper-CSE-203 E

Time allowed : 3 hours]

[Maximum marks : 100

Note :- Attempt five questions in all, selecting at least one question from each unit. All questions carry equal marks.

Unit-I

1. What do you understand by data structure? How can you classify data structures? Also explain various major operations that can be applied on data structures. 20
2. (a) Write down the algorithm for evaluating a postfix expression. 10
(b) What is a Sparse matrix? How can you store a sparse matrix using linear array? Explain. 10

Unit-II

3. Explain the methods to store a queue in computer memory? How a queue is different from priority queue? Explain the memory representation of queue and priority queue. Write and explain one application of queue and priority queue in brief. 20
4. (a) Differentiate between following:
(i) Array and Linked List
(ii) Singly Linked List and Doubly Linked List 10
(b) Write down an algorithm to insert an element in a linked list after a given node. 10

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Unit-III

5. What is a binary tree? Explain various traversal methods on a binary tree in brief. Write an algorithm to traverse a binary tree using any one method and explain with the help of suitable example. 10
6. What is an AVL tree? Explain the procedure to insert and delete a node in an AVL tree with the help of suitable examples in detail. 20

Unit-IV

7. (a) Explain following terms w.r.t. Graph:
(i) Graph
(ii) Multigraph
(iii) Adjacency matrix
(iv) Path matrix
(v) Complete graph. 10
(b) Write down the algorithm for searching a number using Binary Search. 10
8. What do you mean by Hashing? Explain various hashing function in detail. Also discuss various methods of handling collision in hashing. 20

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