

Roll No. _____

Total Pages : 2

8492

BT-3/D07

DATA STRUCTURES

PAPER - CSE-203E

Time : 3 Hrs.

Maximum Marks : 100

Note : Attempt any five questions, selecting at least one question from each unit.

UNIT- I

1. a. Explain Static and Dynamic implementation of data structures, giving suitable examples. Also discuss their advantages and disadvantages. 12
- b. What is an array ? Differentiate between one-dimensional and two-dimensional arrays. Also write the usefulness of an array. 8
2. a. Convert $X : A + (B * C - (D/E + F) * G) * H$ into POSTFIX form showing stack status after every step in tabular form. 12
- b. Write an algorithm that translates in INFIX expression to PREFIX expression. 8

UNIT-II

3. a. What is a circular queue ? Explain its implementation using arrays. Write algorithms to perform insertion and deletion operations on it. 14
- b. Discuss priority queues and their applications. 6
4. a. Write an algorithm to insert a new item at the end of a linked list 4
- b. What do you mean by Doubly linked lists ? What are the (3th sem. Electronic + Math/Eco.) 57

- various operations that can be performed on it ? Write algorithms to insert an element in a doubly linked list. 10
- c. Write short note on Linked implementation of stacks. 6

UNIT-III

5. a. Write an algorithm for traversing a binary tree in pre-order. 7
- b. Explain linked implementation of trees. How is it better than array implementation ? 7
- c. Define the following terms :
- (i) Depth
- (ii) Level
- (iii) Almost complete binary tree 6
6. a. Insert the following elements in an AVL tree in alphabetical order :
March, May, Nov., Aug., April, Jan., Dec., July, Feb., June, Oct. & Sept. 15
- b. Write short note on B-trees. 5

UNIT-IV

7. a. Explain the following :
- (i) Directed graph & Weighted graph
- (ii) Representation of graphs
- (iii) Kruskal's algorithm 12
- b. Write an algorithm for depth-first graph traversal. 8
8. a. Write an algorithm for heap sort giving suitable example. 12
- b. What is Quick sort ? How does it differ from Bubble sort? 8