MODEL QUESTION PAPER

TED (15)-4133 **Reg.No: ……………….……………..**

Signature : ………………………….

FOURTH SEMESTER DIPLOMA EXAMINATION IN COMPUTER ENGINEERING

DATA STRUCTURES

Max. Marks : 100

Time : 3 hours

Part A

(Answer all questions, each question carries 2 marks)

I.

1. Differentiate between linear and non-linear data structures.
2. Define stack
3. State the term – doubly linked list.
4. Define expression tree.
5. Define graph.

(2 x 5 = 10)

Part B

(Answer any five questions, each question carries 6 marks)

II.

1. Explain time complexity and space complexity.
2. Write algorithm to insert a node in first position of a linked list.
3. Describe singly and circular linked lists.
4. Describe about threaded binary tree with example figure.
5. Write all cases to delete a node of BST.
6. Describe bubble sort algorithm.
7. Explain two representation schemes of graph.

(6 x 5 = 30)

Part C

(Answer one full question from each module, each module carries 15 marks)

Module I

III.

1. Explain the algorithm to evaluate a postfix expression using stack ADT (7)
2. Explain about any four data structure operations. (8)

OR

IV.

1. Describe Queue ADT algorithm with operations. (9)
2. Write short notes on priority queue and dequeue. (6)

Module II

V.

1. Describe the algorithm to implement List ADT operations. (8)
2. Explain about implementing stack using LinkedList ADT. (7)

OR

VI.

1. Explain the algorithm to implement queue using LinkedList ADT. (7)
2. Explain algorithms to implement any two LinkedList ADT operations. (8)

Module III

VII.

1. Describe algorithm to implement tree traversals using BST ADT. (9)
2. Draw an example BST, and write tree traversal sequences. (6)

OR

VIII.

1. Write algorithm for insertion and find operations of BST. (7)
2. Describe the terms of tree – siblings, root, leaf, degree of node. (8)

Module IV

IX.

1. Describe DFS graph traversals algorithms with an example. (9)
2. Explain linear search algorithm (6)

OR

X.

1. Decribe warshall’s all-pair shortest path algorithm. (9)
2. Explain quick sort algorithm (6)