No. of Printed Pages : 3

OIEL-002

DECVI / ACECVI

Term-End Examination

December, 2011

OIEL-002 : DATA STRUCTURES

00242

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **any five** questions. Question No. **1** is **compulsory**.*

1. (a) What is an Adjacency List ? **2x7=14**

(i) Representation of graph

(ii) Representation of priority Queue

(iii) Both (i) and (ii)

(iv) None of these

(b) In post-fix notation a + b is written as :

(i) + ab (ii) ab +

(iii) a + b (iv) a − b

(c) Which one is not a linear data structure ?

(i) List (ii) Queue

(iii) Stack (iv) Tree

(d) Which of the following is used in recursion ?

(i) List (ii) Queue

(iii) Stack (iv) Tree

(e) LIFO is used for :

(i) List (ii) Queue

(iii) Stack (iv) Tree

(f) Following notation is used for worst-case analysis of an algorithm.

(i) Big-Oh (ii) Omega

(iii) Theta (iv) None of these

(g) BFS and DFS are :

(i) Traversal methods for graph

(ii) Traversal methods for tree

(iii) Both (i) and (ii)

(iv) None of these

2. (a) Differentiate between structure and union with suitable example. 7

(b) What is Tail recursion ? How tail recursion is removed ? 7

3. (a) Write an algorithm for addition of two polynomials using linked list. 7

(b) Write an algorithm to search an element in a doubly linked list. 7

4. (a) Write a program in C to reverse a string using stack. 7

(b) Write an algorithm for insertion and deletion operations performed on the circular queue. 7

5. (a) What do you understand by hashing ? Explain any two hashing techniques. 7

(b) Write an algorithm for insertion sort and analyze its complexity. 7

6. (a) Create a binary tree with 13 nodes. Perform in order, pre-order and post-order traversal of this tree. 7

(b) Write an algorithm for Prim's method to find MST. 7

7. Write short notes on ***any four*** : **3.5x4=14**

(a) Sequential and random access files

(b) Row-major and column major representation of matrix

(c) Abstract Data Type

(d) Priority Queue

(e) Primitive Operations on Binary Tree

(f) Graph Traversal Techniques