No. of Printed Pages : 3

OIEL-002

DECVI / DCSVI

Term-End Examination

June, 2011

01504

OIEL-002 : DATA STRUCTURES AND FILES

Time : 2 hours *Maximum Marks : 70*

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

1. (a) Which of the following is not a valid identifier ? **2x7=14**

(i) 1 SUM (ii) SUM_1

(iii) SUM 1 (iv) none of these

(b) When a function calls itself it is called _____ ?

(i) Selection (ii) Recursion

(iii) Insertion (iv) None of these

(c) An algorithm is -

(i) An error in program

(ii) A program itself

(iii) A problem

(iv) None of these

(d) Which of the following is not a dynamic memory allocation function ?

(i) malloc ( ) (ii) Calloc ( )

(iii) Realloc ( ) (iv) Sizeof ( )

(e) Graph representation in matrix is called -

(i) Sparse Matrix

(ii) Adjacency Matrix

(iii) Transpose Matrix

(iv) Graph Matrix

(f) Which one is single - source shortest path algorithm ?

(i) Dijkstra Algorithm

(ii) Prim's Algorithm

(iii) Kruskal's Algorithm

(iv) Floyd - Warshall Algorithm

(g) Complexity of Binary Search is

(i) $O(\log_e n)$ (ii) $O(n)$

(iii) $O(\log_2 n)$ (iv) $O(\log_{10} n)$

2. (a) Differentiate between call by value and call by reference technique with suitable example. 7

(b) Write a recursive function to compute factorial of a given number. 7

3. (a) Write an algorithm for binary search. 7

(b) What do you mean by collisions in hashing ? How are they handled ? 7

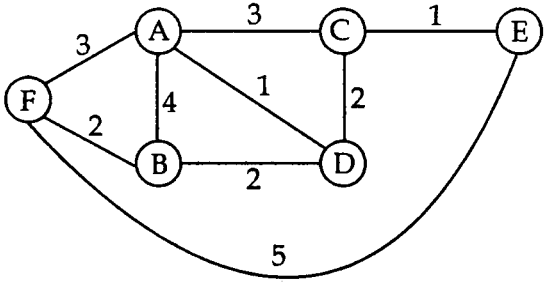
4. (a) Write an algorithm to convert infix expression into an equivalent post-fix expression. Trace your algorithm for following infix expression. 7

$A + B \times C - D/F.$

(b) What is a Circular Queue ? How it is implemented ? 7

5. (a) Create your own Binary Tree. Perform in order, pre order and post order traversal of the tree. 7

(b) Draw the minimum spanning tree for the graph given below 7



6. (a) Write an algorithm to insert a node at beginning of a linked list. 7

(b) Write an algorithm to create a doubly linked list. 7

7. (a) Write an algorithm for merge sort. Also analyse this algorithm. 7

(b) How polynomials are represented by using array ? Illustrate with example. 7