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OIEL-002

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI) / ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRONICS AND COMMUNICATION ENGINEERING (ACECVI)

00263

Term-End Examination

December, 2016

OIEL-002 : DATA STRUCTURES

Time : 2 hours *Maximum Marks : 70*

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

1. Choose the correct answer. *7×2=14*

   (a) A function which calls itself is called

   (i) User defined function

   (ii) Library function

   (iii) Recursive function

   (iv) None of the above

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

   (i) Dijkstra Algorithm

   (ii) Prim's Algorithm

   (iii) Kruskal's Algorithm

   (iv) Floyd-Warshall Algorithm

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

(i) List

(ii) Queue

(iii) Stack

(iv) Tree

(d) Stack supports one of the following patterns :

(i) FIFO

(ii) LIFO

(iii) Both (i) and (ii)

(iv) None of the above

(e) Graph representation in matrix is called

(i) Spare Matrix

(ii) Adjacency Matrix

(iii) Transpose Matrix

(iv) Graph Matrix

(f) LIFO is used for

(i) List

(ii) Queue

(iii) Stack

(iv) Tree

(g) '*' refers to

(i) Value at operator's address

(ii) Address operator

(iii) Scope operator

(iv) None of the above

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

(b) Write a recursive function to generate N natural numbers. 7

3. (a) What is Trail recursion ? How is trail recursion removed ? 7

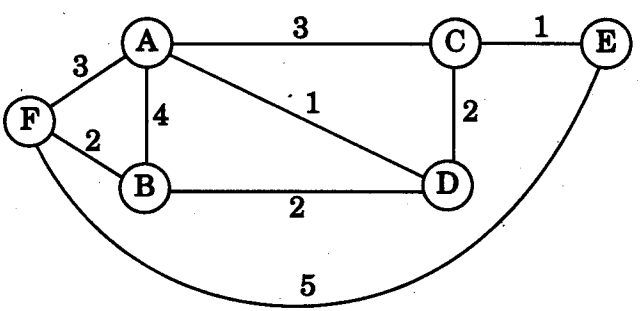
(b) What do you mean by collisions in hashing ? How are they handled ? 7

4. (a) What is Circular Queue ? Write a C program to implement it. 7

(b) Write a C program to print the transpose of a matrix. 7

5. (a) Explain bubble sort with the help of an example. 7

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



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

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

7. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Priority Queue

(b) Union

(c) Structure

(d) Graph Traversal Technique

(e) Sequential and Random Access Files