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OIEL-002

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

00446

Term-End Examination

June, 2015

OIEL-002 : DATA STRUCTURES

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any* ***five*** *questions. Question no.* ***1*** *is* ***compulsory****. All questions carry equal marks.*

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

(a) Which of the following is the correct way of declaring a float pointer ?

(i) float ptr

(ii) float *ptr

(iii) *float ptr

(iv) None of the above

(b) Which of the following gives the value stored in pointer a :

(i) a;

(ii) val (a);

(iii) *a;

(iv) &a;

(c) FRONT=REAR pointer means Queue is

(i) empty

(ii) having one element

(iii) either (i) or (ii)

(iv) both (i) and (ii)

(d) The order followed by stock is

(i) Random

(ii) FIFO

(iii) LIFO

(iv) None of the above

(e) A function which calls itself is called _____ function.

(f) A variable declared outside of a function is called _____ .

(g) The operator _____ is called Address operator.

2. (a) What is a structure ? Explain with example. How does a structure differ from an array ? 7

(b) Differentiate between actual and formal parameter. Write a program in 'C' to swap the two numbers by using call by reference. 7

3. (a) Explain binary search. Write the algorithm for binary search techniques. 7

(b) What is an array ? Explain row-major order and column-major order with example. 7

4. (a) Define the circular linked list. Write the algorithm for insertion at the beginning of a single linked list. 7

(b) Write a program to count the number of modes in a linear linked list. 7

5. (a) Write an algorithm to perform Push and Pop operations in a stack implementation. 7

(b) Write an algorithm to convert infix expression to postfix expression. 7

6. (a) Write a program in | C | to sort an element of array by using bubble sort technique. 7

(b) Sort the following numbers by using selection sort method :

22, 12, 10, 25, 30, 29, 40 7

7. (a) What is a binary tree ? Mention the properties of a binary tree. 7

(b) Define graph. Write and explain the depth-first search algorithm, with the help of an example. 7

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

(a) Doubly Linked List

(b) Hashing Function

(c) Sequential Search

(d) File Operation

(e) Multi-dimensional Array

(f) Spanning Tree