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OICS-001

DIPLOMA – VIEP – COMPUTER SCIENCE AND ENGINEERING (DCSVI) / ADVANCED LEVEL CERTIFICATE COURSE IN COMPUTER SCIENCE AND ENGINEERING (ACCSVI)

Term-End Examination

00286

June, 2016

OICS-001 : DATA STRUCTURES AND FILES

Time : 2 hours *Maximum Marks : 70*

Note : *Question no. 1 is* ***compulsory****. Attempt any* ***four*** *questions from the remaining.*

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

(a) How many elements will be there in A [10] [5] [2] ?

(i) 50

(ii) 100

(iii) 17

(iv) None of the above

(b) Which of the following gives the memory address of integer variable a ?

(i) ∀a;

(ii) a;

(iii) &a;

(iv) Address(a);

(c) The order followed by Queue Data structure is

(i) FIFO

(ii) LIFO

(iii) Random

(iv) None of the above

(d) One can convert an infix expression to postfix expression using a

(i) Stack

(ii) Queue

(iii) Array

(iv) None of the above

(e) Pointer Arithmetic is permitted on any type of pointers.

(i) True

(ii) False

(f) A linear search is always used in a sorted array.

(i) True

(ii) False

(g) An array element need not occupy contiguous memory location.

(i) True

(ii) False

2. (a) What is an array ? Write a program in C to sum two matrices. 7

(b) What is a function ? Differentiate between call by value and call by reference with examples. 7

3. (a) What is a pointer ? How can a pointer be used in a multidimensional array ? 7

(b) Explain different file operations. Differentiate between sequential and random access files. 7

4. (a) Sort the following elements using bubble sort : 7

10, 20, 5, 30, 25, 45, 8, 60, 2

(b) Write a program to sort an array's elements using selection sort. 7

5. (a) Write an algorithm for binary search and explain it with the help of a suitable example. 7

(b) Write a C program to pop an element from a stack. 7

6. (a) Write the algorithm for evaluating a postfix expression. 7

(b) Explain Linear Queue and compare it with Circular Queue. 7

7. (a) Define the binary tree representation. Explain primitive operations on a binary tree. 7

(b) Write an algorithm for creating a minimum spanning tree. 7

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

(a) Recursion

(b) Priority Queue

(c) Circular Linked List

(d) Hashing Function

(e) Abstract Data Types

(f) Structure and Union