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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

00183 **June, 2015**

OICS-001 : DATA STRUCTURES AND FILES

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 of the following : *7×2=14*

(a) Which of the following is the proper declaration of a pointer ?

(i) int x;

(ii) int &x;

(iii) ptr x;

(iv) int *x;

(b) Which of the following is the proper keyword or function to allocate memory in 'C' ?

(i) new

(ii) malloc

(iii) create

(iv) value

(c) The complexity of binary search algorithm is

(i) O(n)

(ii) O(log n)

(iii) $O(n^2)$

(iv) O(n log n)

(d) The order followed by queue data structure is

(i) LIFO

(ii) FIFO

(iii) Random

(iv) None

(e) A function can return only one value at a time. (True/False)

(f) An array element may be an array by itself. (True/False)

(g) Quick sort always divides the array elements into equal size. (True/False)

2. (a) How are pointer and array used in 'C' programming language ? Explain with suitable examples. *7*

(b) What is an array of structure ? Differentiate between structure and union. *7*

3. (a) Explain Binary search algorithm with the help of an example. 7

(b) Differentiate between Random access files and Sequential files. 7

4. (a) What do you mean by linked list ? Write an algorithm for insertion at the beginning of a singly linked list. 7

(b) Write a 'C' program using a pointer to read an array of integers and print the elements in reverse order. 7

5. (a) Write an algorithm to insert and delete an element in Queue. 7

(b) Write an algorithm to convert infix expression into post-fix expression. 7

6. (a) Explain the following : 7

(i) Depth First Search

(ii) Minimum Spanning Tree

(b) Define Graph. Explain the properties of a graph. 7

7. (a) Write a 'C' program to sort the elements of an array using bubble sort technique. 7

(b) Write a 'C' program to count the number of lines in a file. 7

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

(a) Breadth First Search

(b) Binary Tree Representation

(c) Concept of Priority Queue

(d) AVL Tree

(e) Circular Linked List

(f) Hashing Function