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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

December, 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. *7×2=14*

(a) The complexity of bubble sort algorithm is

(i) O(n)

(ii) O(log n)

(iii) $O(n^2)$

(iv) O(n log n)

(b) How many elements will be there in

A [10] [5] [2] ?

(i) 50

(ii) 100

(iii) 17

(iv) None of the above

(c) Which of the following gives the memory address of a variable pointed to by pointer a ?

(i) a;

(ii) *a;

(iii) &a;

(iv) address(a);

(d) The order followed by Queue is

(i) LIFO

(ii) FIFO

(iii) Random

(iv) None of the above

(e) The callc ( ) function is used to allocate block of memory at run time. (True/False)

(f) The function _____ is used to open a file.

(g) A string is a _____ of character.

2. (a) How are multidimensional arrays defined ? Compare them with one-dimensional and two-dimensional arrays. 7

(b) What is a pointer ? Write a program using a pointer to swap two numbers. 7

3. (a) Write a 'C' program to create a singly linked list and display the linked list elements. 7

(b) Explain Hashing. Describe the various Hash functions with example. 7

4. (a) What is a file ? Explain the various types of files. Explain the various file operating systems with examples. 7

(b) What is searching ? Write any one searching algorithm. 7

5. (a) Write an algorithm to : 7

(i) insert an element into queue

(ii) delete an element from queue

(b) Write a 'C' program to accomplish the following stack operations : 7

(i) push

(ii) pop

6. (a) The following sequence gives the preorder and inorder of the Binary tree T :

Preorder : A B D G C E H I F

Inorder : D G B A H E I C F

Draw the diagram of the tree. 7

(b) Define Graph. How are graphs represented by using adjacency matrix ? 7

7. (a) Write an algorithm to sort the elements of an array using selection sort technique. 7

(b) Sort the following elements by using Quick sort technique : 7

45, 26, 77, 14, 68, 61, 97, 39, 99, 90.

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

(a) Depth First Search

(b) Breadth First Search

(c) Minimal Spanning Tree

(d) Binary Tree Traversal

(e) Sequential and Random Access Files

(f) Priority Queue