No. of Printed Pages : 4

OICS-001

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

Term-End Examination

00724 **December, 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) What is the index number of the last element of an array with 19 elements ?

   (i) 19

   (ii) 18

   (iii) 0

   (iv) None of the above

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

   (i) 50

   (ii) 15

   (iii) 10

   (iv) 5

(c) Which of the following gives the value stored in pointer a ?

(i) a;

(ii) val(a);

(iii) *a;

(iv) &a;

(d) Which of the following is true to search an element from an unsorted array ?

(i) Linear Search

(ii) Binary Search

(iii) Both (i) and (ii)

(iv) None of the above

(e) Quick sort is based on divide and conquer approach.

(i) True

(ii) False

(f) A stack follows FIFO.

(i) True

(ii) False

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

(i) open( )

(ii) file_open( )

(iii) fopen( )

(iv) file( )

2. (a) Define array. Write an algorithm for matrix multiplication. 7

(b) What is a record ? How does a record differ from a file ? Explain. 7

3. (a) What is the difference between function and recursive function ? Explain with example. 7

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

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

22, 44, 33, 55, 11

(b) Write a program to sort elements using bubble sort. 7

5. (a) What is Binary Search ? Write an algorithm for it and explain with a suitable example. 7

(b) Explain various Parameter Passing Techniques with the help of an example. 7

6. (a) Write an algorithm to evaluate a postfix expression. 7

(b) Write a program to reverse a linked list. 7

7. (a) Write an application of the following : 7

(i) Depth first search

(ii) Breadth first search

(b) What is a Binary tree ? Explain binary tree traversal with a suitable example. 7

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

(a) Adjacency Matrix

(b) Priority Queue

(c) Circular Queue

(d) Hashing Function

(e) Circular Linked List