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OICS-001

00361

DIPLOMA-VIEP-COMPUTER SCIENCE ENGINEERING - II (DCSVI)/ADVANCED LEVEL CERTIFICATE COURSE IN CSE (ACCSVI)

Term-End Examination

December, 2013

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. All questions carry* ***equal*** *marks.*

1. State whether True/False

(a) A binary tree can have minimum 2 numbers of children. **2**

(i) True

(ii) False

(b) Bubble sort is more suitable than selection sort if the list to be sorted is small. **2**

(i) True

(ii) False

(c) Depth First search can be implemented iteratively using STACK as a data structure. **2**

(i) True

(ii) False

(d) Queue is a linear data structure. **2**

(i) True

(ii) False

Choose the correct answer

(e) Which of the following is a collection of heterogeneous elements. 2

(i) union
(ii) structure
(iii) array
(iv) both (i) and (ii) of them

(f) A graph containing only isolated nodes is known as 2

(i) null graph
(ii) directed graph
(iii) full graph
(iv) none of them

(g) Which of the following devices supports sequential files ? 2

(i) magnetic tapes
(ii) card reader
(iii) tape cassettes
(iv) all of them

2. (a) How an array elements can be passed to a function? Explain with examples. 8

(b) Differentiate between structure and union with suitable example. 6

3. (a) What is structured programming? Is there any relationship with top-down programming ? Explain. 8

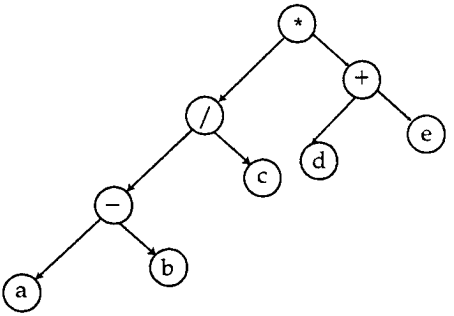
(b) Which kind of searching algorithm is suitable if the given list is ordered. Write proper algorithm for the same. 6

4. (a) Draw the diagram and write the algorithm to explain how traffic signalling can be modeled using graph. 8

(b) Convert the following expression to postfix expression using stack as a underlying data structure. 6

A/B − C + (G*H) + D

5. (a) What is tree traversal? Show the pre-order, inorder and post order notation of the following binary expression tree. 8



(b) Write a function to count the number of items in a queue. 6

6. (a) Write an algorithm to insert an item in a sorted linked list. 6

(b) Explain various collision resolution techniques for hashing. 8

7. (a) Write a procedure to add two polynomials using linked list. 6

(b) Write down the merge sort algorithm and find out the average and worst case complexity for it. 8

8. Write short notes on **any four** of the following : 14

(a) Random access file

(b) Characteristics of a good program

(c) Priority queue

(d) ADT

(e) Selection sort

(f) Doubly linked list