

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

Term-End Examination

June, 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) Root node is the only nodes in the tree that does not posses a parent. 2
(i) True (ii) False
- (b) Breadth First Search (BFS) can be implemented iteratively by using queue as a data structure. 2
(i) True (ii) False
- (c) Tree is a linear data structure. 2
(i) True (ii) False
- (d) Structure is a collection of heterogeneous data types. 2
(i) True (ii) False

Choose the correct answer

- (e) Which of the following sorting technique(s) does not requires extra space, than the data to be stored ? 2
- (i) Bubble sort
 - (ii) Insertion sort
 - (iii) Selection sort
 - (iv) All of them
- (f) The fundamental operation(s) that are performed on files are : 2
- (i) creation of a file
 - (ii) updation
 - (iii) maintenance
 - (iv) all of them
- (g) Array elements are stored in : 2
- (i) column major order
 - (ii) diagonal order
 - (iii) row major order
 - (iv) either (i) or (ii)
2. (a) Differentiate between call by value and call by reference with suitable example. 8
- (b) Define nested structure with suitable examples. 6
3. (a) Define - complexity of an algorithm. Find out the average case complexity for sequential search and binary search. 8
- (b) Write a program to evaluate a postfix expression. 6

4. (a) Write a function to find the minimum cabling length in a locality using minimum spanning tree algorithm. 8
- (b) Convert the following expression to postfix expression using STACK as a underlying data structure. 6
- $$A * B - C + D / E / (F + G)$$
5. (a) Explain the disadvantages of implementing queue (non - circular) using array. Also show the conditions that differentiate between empty queue and full queue. 8
- (b) Draw the binary tree that represents the following pre order expression : 6
- 20, 15, 10, 18, 17, 30, 25, 40, 35, 38, 50,
6. (a) Explain various hashing techniques with suitable examples. 8
- (b) Write an algorithm to delete any node containing information 'N' from the linked list. 6
7. (a) Differentiate between singly linked list and doubly linked list. Also write their advantages and disadvantages. 8
- (b) Write down the quick sort algorithm and find the worst case and average case complexity for it. 6

8. Write short notes on *any four* of the following. **3.5x4=14**
- (a) ADT
 - (b) Bubble sort
 - (c) Recursion
 - (d) Array storage representation
 - (e) Characteristics of a good algorithm
 - (f) Merits and demerits of pointers.
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