| OICS-001 |

01984

DIPLOMA-VIEP-COMPUTER SCIENCE ENGINEERING - II

Term-End Examination

June, 2011

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.   (a)   What is the efficiency of Quick Sort ?   2

           (i)   0 (n log n)   (ii)   0 (n^2 log n)

           (iii)   0 (n log n^2)   (iv)   0 (n log n^3)

     (b)   Name the function that transforms a key   2
           into a Table Index.

           (i)   Recursive Function

           (ii)   **a** to **f** Function

           (iii)   Hash Function

           (iv)   Conversion Function

     (c)   An AVL tree is a balanced tree.   2

           (i)   True   (ii)   False

(d) Selection Sort is better than Bubble Sort.   **2**

    (i)   True   (ii)   False

(e) The type of graph in which a number is   **2**
associated with each arc

    (i)   Cyclic graph

    (ii)   Acyclic graph

    (iii)   Incident graph

    (iv)   Weighted graph

(f) Pointers are used to hold an array address   **2**
only.

    (i)   True   (ii)   False

(g) Pointers are used to signal the end of linked   **2**
list.

    (i)   Insertion Pointer

    (ii)   Null Pointer

    (iii)   Information Pointer

    (iv)   Address Pointer

2. (a) Write and explain Quick Sort Algorithm   **10**
using Recursion.

    (b) Explain Break and continue statement used   **4**
in 'C' with examples.

3. (a) Write the conversion function **i** to **a** which   **7**
converts a number to a character string.

    (b) Explain Hashing. How we can resolve Hash   **2+5**
clashes by open addressing.

4. (a) Explain the Algorithm which helps in evaluating the postfix expression with suitable examples. **10**

(b) Explain the concept of Multidimensional Arrays with examples. **4**

5. (a) List the main advantage list implementation of stacks. Explain Push and Pop operation associated with stacks using algorithms. **10**

(b) Explain the concept of Priority Queue. **4**

6. (a) Write an algorithm to traverse a graph using Breadth - First traversal beginning at node. **8**

(b) Explain the efficiency of Depth First Traversal. **6**

7. (a) Write and explain in detail the algorithm for Minimum spanning tree i.e. Prim's Algorithm. **10**

(b) Write an algorithm to count number of nodes in Binary tree. **4**

8. Write short note on (*any four*) : **3½x4**

(a) Circular Linked List.
(b) Structures in 'C'
(c) Linked List
(d) Bubble Sort
(e) Sequential Searching
(f) Shortest Path

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