Roll No. ..... **Exam Code : J-19**

Subject Code—0377-X

M.C.A. (Second Year) EXAMINATION

(5 Years Integrated Course) (D.E.)

(Batch Prior to 2009 Re-appear)

DATA STRUCTURE & ALGORITHMS

MCA-201

Time : 3 *Hours* *Maximum Marks :* 100

Section A

Note : Attempt any *Seven* questions. **7×7=49**

1. What are data structures ? Explain abstract data types.

2. What are single and multi-dimensional arrays ? How are addresses calculated in single and multi-dimensionals arrays ?

3. What are Strings ? Write an algorithm for reversing a string.

4. Write algorithm for insertion and deletion from the end of linked list.

5. What are circular linked list ? Write an algorithm for insertion at the last location in circular queues.

6. Write an algorithm for finding path matrix.

7. Write and explain an algorithm for selection sort.

8. Explain different hashing techniques.

9. Write an algorithm for in-order traversal of a tree.

10. Define the following :

(a) Threaded trees

(b) Balanced tress

Section B

Note : Attempt all the questions. **3×17=51**

11. Write algorithms for insertion and deletion from beginning and end of array.

Or

Write algorithm for heap sort ? Explain with the help of an example sorting using heap.

12. Make a binary search tree of given data :

102, 30, 60, 8, 7, 40, 4, 30, 20, 500, 700, 900, 100.

After making the tree, delete 500 and 8 from it.

Or

How sets are represented using linked lists ? Write algorithms for various operations on sets ?

13. Explain the application of graphs on route problem and minimum cost spanning tree ?

Or

What is meant by sequential and binary search ? Write algorithms for sequential and binary search and compare them on the basis of their complexity.