Roll No. | | | | | | | | | | | |

Total No. of Questions: 09 **Total No. of Pages: 02**

MCA (Sem. 2)
DATA STRUCTURES
Subject Code: MCA-203
Paper ID: 72878

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **Sections A, B, C and D contains TWO questions each carrying TEN marks each.**
2. **Attempt any ONE question from each Section A, B, C and D.**
3. **Section E is compulsory carrying TWO marks in each.**

SECTION A

1. What are the advantages and disadvantages of representing a group items as an array with the help of example?

2. What is a Linked List? Explain with diagrams how nodes can be added and deleted from the middle of a linked list?

SECTION B

3. Illustrate the concept for the following statement:

To accept input as a characters string of operators and operands representing a postfix expressions and to create the fully parenthesized infix form of the original postfix. For example AB+ would be transformed into (A+B) and AB+C- would be transformed into ((A+B)-C).

4. What are Binary trees? Mention different types of binary trees and explain briefly?

SECTION C

5. Write an algorithm for Depth- first search traversal of graph?

6. Explain the different types of Graphs? Differentiate using example.

SECTION D

7. Give an Algorithm for Bubble Sort and explain its time complexity. Trace the algorithm for the following data:

65 70 75 80 85 60 55 50 45

8. Write short note on:

a) Threaded Binary Tree

b) Complexity of sorting techniques

SECTION E

9. Write briefly:

a) Which sorting method is highly space complex?

b) Which data structure method is best suitable for the implementation of priority queue?

c) Explain Linear Probing for collision resolution in hashing?

d) Define stack. Briefly explain the primitive operations on the stack.

e) Explain circular list?

f) What are recursive functions?

g) Differentiate between In-order, Pre-order and Post-order?

h) Define Quick Sort?

i) Define Dynamic Memory Allocation?

j) What is AVL?