

**MASTER OF COMPUTER APPLICATION**  
**Third Semester**  
**DATA STRUCTURE**  
**(MCA - 301)**

**Duration: 3Hrs.**

**Full Marks: 70**

Part-A (Objective) =20  
Part-B (Descriptive) =50

**(PART-B: Descriptive)**

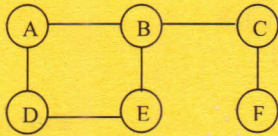
**Duration: 2 hrs. 40 mins.**

**Marks: 50**

**Answer any four from Question no. 2 to 8**  
**Question no. 1 is compulsory.**

1. What is the significance of linked list in data structure? Differentiate each type of linked list with the help of diagrams. (3+7=10)
2. What do you mean by ADT? How they are used in a program? (2+8=10)
3. What is the importance of using malloc ( ) function in a program? What are the applications of malloc ( ) function? (5+5=10)
4. Differentiate between a stack & a queue. Write a function to explain the push ( ) operation. (5+5=10)
5. What property of a binary tree makes a binary search tree? Draw a binary search tree for the following elements-  
20, 25, 30, 15, 17, 29, 32, 10, 5, 40 (4+6=10)
6. Why circular queue is different from a double ended queue?  
Explain diagrammatically. (10)

7. Determine the Breadth First Traversal and Depth First Traversal of the graph shown below: (5+5=10)



8. Write a program to sort an array by using Bubble Sort. Write down the intermediate steps of sorting the following array of elements using Bubble Sort. (5+5=10)
- A=40, 50, 30, 85, 70, 65, 90

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