

Exam. Code : 206701

Subject Code : 4676

M.Sc. Computer Science 1st Semester

ADVANCED DATA STRUCTURES

Paper-MCS-101

Time Allowed—3 Hours] [Maximum Marks—100

Note :— Attempt **five** questions, selecting at least **one** question from each Section. All questions carry equal marks.

SECTION-A

1. (a) Define the concept of Binary Search Tree. Explain the procedure of inserting an element in Binary Search Tree.

- (b) Make a Binary Search Tree by inserting the following numbers in the sequence :

50 39 70 90 45 15 40 46 35 100 65 60

2. What is an AVL tree ? Discuss its advantages. How AVL tree is represented in the memory ? Create an AVL tree of :

150 140 130 120 125 122 110 100 105

SECTION-B

3. What is Heap ? Draw the Max Heap and Min Heap with the following elements :

70 80 50 45 95 25 30 100 90 85 15 10

4. What do you mean by Priority Queue ? How it can be represented in the memory ? What are the application areas of Priority Queue ? Explain.

SECTION-C

5. What do you mean by Binomial Heap ? How it is represented in the memory ? Write a procedure to insert a node into the binomial heap. Explain with the help of suitable example.
6. What do you mean by disjoint set ? What is its significance ? How a disjoint set can be represented into memory ? Explain MakeSet(), FindSet(), and Union() operations on disjoint sets.

SECTION-D

7. Explain the concept of External Storage. Discuss different ways through which the data can be accessed stored on external storage devices.
8. Discuss the process of External Hashing using a suitable example. Discuss the disadvantages of External Hashing.