DATA STRUCTURE-II

Time : Three Hours Maximum Marks : 80

Note : Attempt ***five*** questions are to be attempted. Selecft ***one*** question from each section. Question No. 1 is compulsory.

Compulsory Question

1. Attempt all the following :
   (a) Consider the algebraic expression $E = (3a + b)(5x - y)^2$. Draw the corresponding binary tree. 3
   (b) Explain the difference between Fixed length record and Variable length record. 3
   (c) Explain Mid-squae Hashing function. 3
   (d) What is Bucket over flow in an indexed sequential file ? 3
   (e) What is Tree traversal ? Give an example. 2
   (f) Write a short note on File transaction operation.

SECTION-I

2. Wha tis AVL tree ? Develop a algorithm to traverse an AVL tree. Write applications of AVL tree. 16

3. Write notes on the following :
   (a) Huffman's algorthim for building an extended binary tree. 8
   (b) A Threaded binary tree and its representation in memory. 8

SECTION-II

4. (a) Explain Warshall's algorithm for group traversing.
   (b) Describe multilist representation of a graph in memory and its advantages. 8
5. Write algorithm for the following : 8
   (a) Topolgical sorting
   (b) Insertion and Deletion of a node in a graph

SECTION-IIII

6. (a) Sort the following table of integers in ascending order using Quick-sort method :
   56, 47, 92, 38, 44, 90, 61, 73, 25, 19
   (b) Calculate efficiency of merge sort in terms of memory utilisation and time (execution). 8
7. (a) How radix sort is implemented using the concept of bucket ? 8
   (b) What is the pre-requisit for binary search ? Also writre an algorithm for binary search. 8

SECTION-IV

8. What is the difference between a sequential file organisation and indexed sequential file organisation, and also explain how indexed is more efficient. 16
9. How we resolve collisions ? Explain collision resolution by open addressing and separate chaining method. 16