Q.P. Code: 552301

(3 Hours) [Total Marks : 80

N.B. : (1) Question No.1 is Compulsory.
  (2) Answer **any three** out of remaining questions.
  (3) Assume suitable data if necessary.
  (4) **Figures** to the **right** indicate full **marks**.

1. (a) Define Algorithm and write its properties. 3

   (b) Write properties of B-Tree. 3

   (c) Define minimum spanning trees with examples. 3

   (d) What is Queue ADT ? Mention its operations. 3

   (e) What is linked list ? Explain types of linked list. 3

   (f) Define Recursion ? State its advantages and disadvantages. 3

   (g) Explain linear and non-linear data structures. 2

2. (a) Write a program to implement queue using arrays. 10

   (b) Write an algorithm for insertion and traversal in a circular linked list. 10

3. (a) Write a program to convert INFIX expression into POSTFIX expression. 10

   (b) Write an algorithm to implement Heap-sort. Also comment on its complexity. 10

4. (a) Define AVL Tree ? Construct AVL Tree for the following data (Mention type of rotation for each case) 10
      10,40,30,20,70,50,45.

   (b) Write a program to implement Priority Queue. 10

5. (a) Explain BFS and DFS algorithm with examples.   10

  (b) What is Binary Search-Tree ? Construct the Binary Search Tree for the   10
      following set of data :
         14, 10, 1, 20, 17, 24, 18, 12, 15, 11, 4, 6 .

6. Write short notes on **any four** of the following:-   20
     (1) Red-black Trees
     (2) Searching Algorithms
     (3) Adjacency list and Adjacency matrix
     (4) Euclid's Algorithm
     (5) Expression Trees
     (6) Asymptotic Notations.