



(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



Q.P. Code: 552301

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5. (a) Explain BFS and DFS algorithm with examples. 10
- (b) What is Binary Search-Tree ? Construct the Binary Search Tree for the following set of data : 10
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.
