

1. Explain the following with appropriate diagrams & examples
 - a) Quadratic hashing for collision avoidance
 - b) Red Black Tree
 - c) Integer Multiplication by divide and conquer
 - d) Dynamic Programming
 - e) Sparse matrices and their linked list representation

2. Write Algorithms for the following
 - a) Boyer-Moore Algorithm for string matching
 - b) Topological Sort

3. Explain binomial heaps and their specific advantages. How we perform merge operations on two binomial heaps.

4. Write a detailed note on Fibonacci heap. How we merge two Fibonacci heaps. Discuss the procedure for extracting and deleting the minimum number.

5. What you understand by B-Trees. Take an example and show the working of basic operations on B-Trees.

6. Define AVL trees. What are the various rotation operations involved. Discuss insertion and deletion by taking an example of an AVL tree.