

(3 Hours)

[Total Marks: 80]

N.B.: (1) Question No.1 is compulsory.

(2) Attempt **any three** out of remaining questions.

(3) Assume Suitable data if necessary.

(4) **Figures** to the **right** indicate full **marks**.

- Q1 a. Differentiate between Greedy method and Dynamic Programming. 5
 b. Write an algorithm for finding minimum and maximum number from a given set 5
 c. Explain coin changing problem 5
 d. Explain Flow Shop Scheduling Technique 5
- Q2a. Define AVL tree. Construct an AVL tree for the following data. 10
 63, 9, 19, 27, 18, 108, 99, 81
- b. Write an algorithm for implementing Quick sort. Also, comment on its complexity. 10
- Q3a. What is longest common subsequence problem? Find LCS for the following string: 10
 String X: ABCDGH
 String Y: AEDFHR
- b. Explain Rabin Karp Algorithm in detail. 10
- Q4a. Which are the different methods of solving recurrences? Explain with suitable examples. 10
 b. Explain Travelling Salesman Problem with an example. 10
- Q5a. Explain Huffman Algorithm. Construct a Huffman Tree and find Huffman code for the message: KARNATAKA. 10
 b. Explain Knapsack Problem with an example. 10
- Q6 Write Short notes on (**any four**) 20
 a. Genetic Algorithm
 b. Red and Black Tree
 c. Merge Sort
 d. Knuth Morris Pratt Algorithm
 e. Optimal Binary Search Tree (OBST)