(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)
