ODD-24
DEC-24

(Time: 3 Hours) (Total Marks: 80)

N.B.: (1) Question No. 1 is compulsory.
(2) Attempt any three out of the remaining five questions.
(3) Assumptions made should be clearly stated.
(4) Figures to the right indicate full marks.

Q1 Solve any FOUR (each of 5 marks) **20**

a) Write note on masters Theorem.
b) Explain in details Red-Black tree.
c) Write note on optimal merge pattern.
d) Define & explain principal of optimality.
e) Explain in detail Naïve string-matching Algorithm

Q2 **a)** What is complexity? Explain in detail asymptotic notation. **10**
b) Define B+ tree and explain in detail the insertion operation for the following sequence 51,52,53,54,55,56,57,58,59,60 and construct the B+ tree of order three. **10**

Q3 **a)** Write a recursive algorithm for quick sort & compute its complexity. **10**
b) Given the program lengths L = {12, 34, 56, 73, 24, 11, 34, 56, 78, 91, 34, 91, 45}. Store them on three taps and minimize MRT. **10**

Q4 **a)** What is the divide and conquer strategy? Write an algorithm for finding the maximum and minimum. **10**
b) Explain the 0/1 knapsack algorithm in detail. **10**

Q5 **a)** Explain in detail Rabin Karp string matching Algorithm. **10**
b) Explain in detail Travelling sale person problem with its complexity. **10**

Q6 **a)** Explain in detail Longest Common Subsequence (LCS) string matching algorithm with example. **10**
b) Explain in details P, NP, NP hard and NP complete problem. **10**

****