

QP Code : 3542

(3 Hours)

[Total Marks : 80]

- N.B. (1) Question No. 1 is compulsory.
 (2) Attempt any **three** from the remaining **five** question.
 (3) Assume **suitable** data if **required**.

1. (a) Write abstract algorithm for greedy design method. 5
 (b) Which are different factors considered for sorting elements. 5
 (c) Explain flow shop scheduling technique. 5
 (d) Explain three cases of master theorem. 5
2. (a) Write and explain sum of subset algorithm for 10
 $n = 5, W = \{2, 7, 8, 9, 15\} M = 17$
 (b) Explain randomized version of Quick sort and derive its complexity 10
3. (a) Implement the bubble sort Algorithm and derive its best case and worst case 10
 complexity.
 (b) Find the Huffman code for the following message. 10
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4. (a) What is Hamiltonian cycle ? Write an algorithm to find all Hamiltonian cycles. 10
 (b) Suppose you are given n number of coins, in that one coin is faulty, its weight 10
 is less than standard coin weight. To find the faulty coin in a list using proper
 searching method. What will be the complexity of searching method.
5. (a) Explain Job sequencing with deadliner for the given instance. 10
 $n = 5, \{P_1, P_2, P_3, P_4, P_5\} = \{20, 15, 10, 5, 3\}$
 $\& \{d_1, d_2, d_3, d_4, d_5\} = \{2, 2, 1, 3, 3\}$
 (b) Explain naïve string matching algorithm with example. 10
6. Write note on : (any two) 20
 (a) Rabin karp algorithm
 (b) 15-puzzle problem
 (c) Travelling sales person problem
 (d) Strassen's matrix multiplication.