Max Marks: 80   **Time Duration: 3 Hrs**

Note : Question number 1 is Compulsory.   Solve any Three questions from Remaining.

Q1. Answer Following Questions (Any Four)   20M

   a)   What is backtracking Approach. Explain how it is used in graph coloring.
   b)   Explain Randomized algorithm with example.
   c)   What is Knuth Morris Pratt Method of Pattern Matching? Give Examples.
   d)   Explain in brief the concept of Multistage Graphs?
   e)   Merge sort and its complixity.

Q2. A) Derive and comment on the complexity of Quick Sort algorithm.
                             10M

   b) Solve Following Knapsack problem using dynamic approach.   10M

      N=4 items, capacity of knapsack M= 9

Item i	Value vi	Weight wi
1	18	2
2	25	4
3	27	5
4	10	3

Q3. A) What is sum of Subset problem? Write the Algorithm and solve following.   10M

   array A = [2,3,5,6,7,8,9] and K = 15

   b) Write the algorithm for finding strassens matrix multiplication and show how the complexity
      is being affected?.   10M

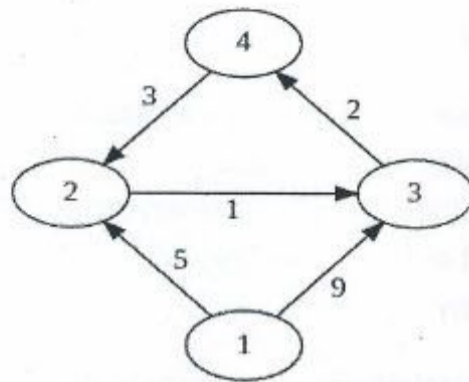Q4. A) What is Longest Commom subsequence Problem? Find LCS for following.   10M

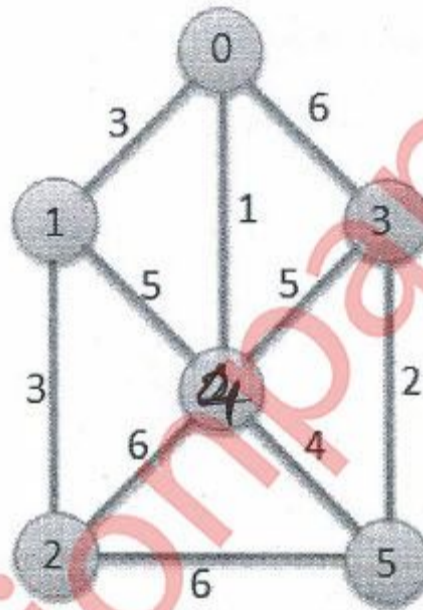   String x = **ACBAED**

   String y = ABCABE

   b) Explain binary search Tree? How to generate an optimal binary search tree.   10M

Q5. A) What is all pairs shortest path algorithm? Apply the same on following Graph.   10M

b) Find MST of Following Graph using Prims and Prism's Algorithm.   10M
Kruskals

Q6. Write Short Notes on (Any Three)   20M

     a)   Optimal Storage on Tapes

     b)   15 puzzle problem.

     c)   Binary Search and its complexity.

     d)   Problem of Multiplying Long Integers.