

(3 Hours)

Total Marks: 80

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

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

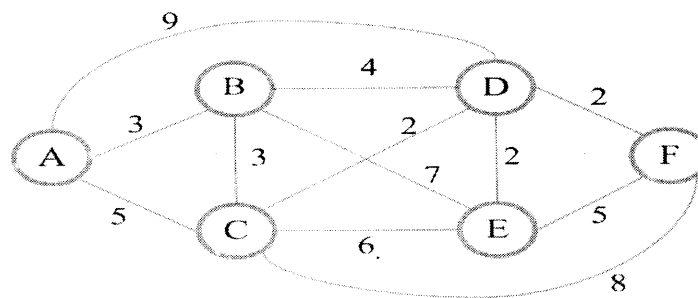
- Q1. a) Sort the following numbers using Merge Sort. Also derive the time complexity of Merge Sort.

70, 20, 30, 40, 10, 50, 60 (10)

- b) Explain different string matching algorithms. (10)

- Q2. a) Write an algorithm to find minimum and maximum value using divide and conquer and also derive its complexity. (10)

- b) Find the shortest path from source vertex A using Dijkstra's algorithm



- Q3. a) Write an algorithm for sum of subsets. Solve the following problem.

M=30 W={5, 10, 12, 13, 15, 18} (10)

- b) Explain optimal storage on tape with example. (10)

- Q4. a) Find an optimal solution to the knapsack instance $n=5$, $m=60$

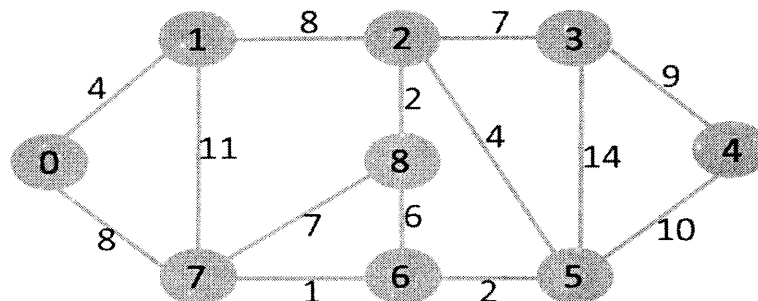
profit={30, 20, 100, 90, 160}

weight={5, 10, 20, 30, 40}

(10)

- b) Explain longest common subsequence with example. (10)

- Q5. a) Find the Minimum Spanning Tree of the following graph using prim's algorithm



- b) Explain flow shop scheduling with example. (10)

- Q7. Write note on (any two): (20)

a) Strassen's matrix multiplication.

b) 15-puzzle problem.

c) Job sequencing with deadlines.

d) N-Queen problem.
