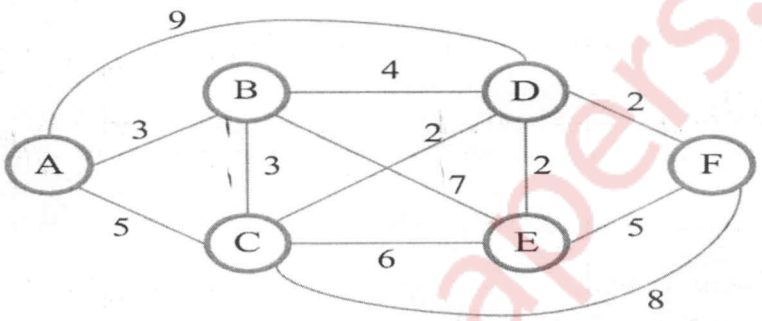
Q. P. Code: 35630

(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)

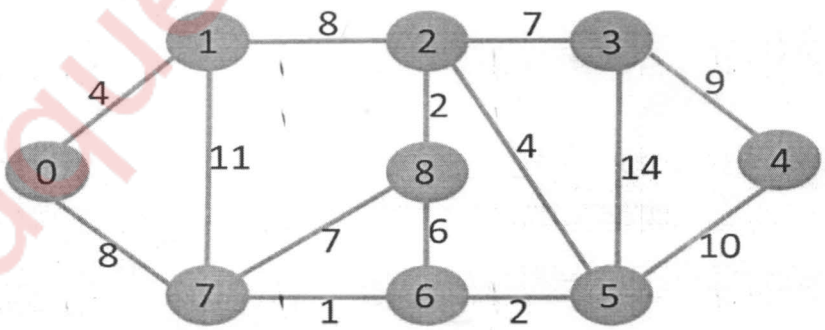
Q2. a) Write an algorithm to find minimum and maximum value using divide and conquer and also derive its complexity. (10)
b) Find the shortest path from source vertex A using Dijkstra's algorithm



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.