Paper / Subject Code: 40502 / Analysis of Algorithms

Time Duration: 03Hrs **Marks: 80**

Note: Question 1 is compulsory.

Attempt any three out of remaining five questions.

Make suitable assumptions whenever necessary.

Q.1 [a] Explain the Strassen's matrix multiplication concept with an example. [10]
Derive it's time complexity.

[b] Apply the quick sort algorithm to sort the list. E,X,A,M,P,L,E in [10]
alphabetical order. Analyze the best case, worst case and average case
complexities of quick sort.

Q.2 [a] Solve following problem of sum of subset and draw portion of state space [10]
tree.
w= (5,7,10,12,15,18,20) and m=35.
Find all possible subsets of w that sum to m.

[b] What is single source shortest path algorithm. Write an algorithm to find [10]
single source shortest path using greedy methods

Q.3 [a] Prove that vertex cover problem is NP complete. [10]
[b] Explain various string matching algorithms. [10]

Q.4 [a] Find the minimum cost path from s to t in the following figure using [10]
multistage graph.
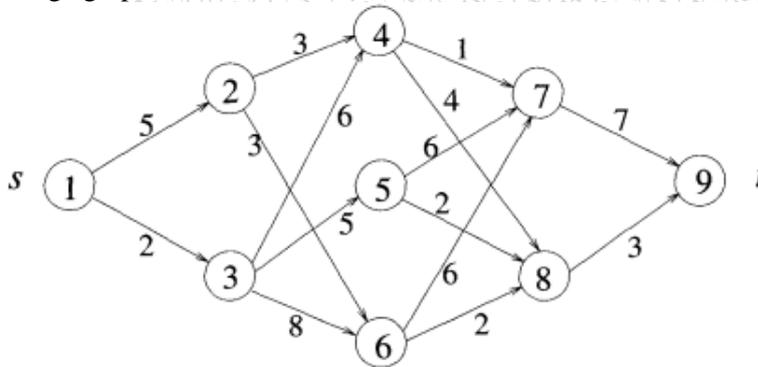
[b] Describe the Travelling sales person problem and discuss how to solve it [10]
using dynamic programming with example.

Q.5 [a] What is longest common subsequence problem? Find the LCS for the [10]
following problem.
[b] Write a short note on 8 queen problem, Write an algorithm for the same. [10]

Q.6 Write a short note on(Any two)
1.Branch and Bound Strategy. [10]
2.Algorithms to find minimum spanning tree. [10]
3.Recurrenses.