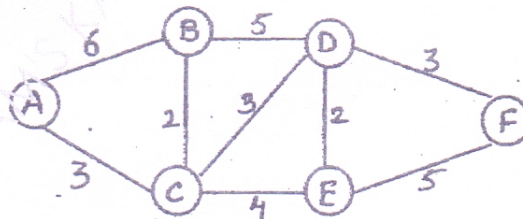


(Old Course)
(3 Hours)

[Total Marks: 100

- N. B.: 1. Question no. 1 is compulsory.
2. Solve any four from remaining questions.
3. Figures to right indicate marks.

- Q. 1. a) Explain growth of function (Big-Oh, Omega, Theta) notation with an example of each. 10
- Q. 1. b) Write algorithm for Merge Sort. Give its Worst, Average, and Best case complexity. 10
- Q. 2. a) Explain Strassen's matrix multiplication algorithm with an example. Give its complexity. 10
- Q. 2. b) Find an optimal solution using Job sequencing with deadlines algorithm. 10
Let $n = 4$,
 $(p_1, p_2, p_3, p_4) = (100, 10, 15, 27)$ and
 $(d_1, d_2, d_3, d_4) = (2, 1, 2, 1)$.
- Q. 3. a) Calculate variable length Huffman code for following frequencies 10
 $A = 2, B = 6, C = 4, D = 15, E = 7, F = 22, G = 9, H = 17$.
- Q. 3. b) Consider the knapsack instance 10
 $n = 3, m = 6$,
 $(w_1, w_2, w_3) = (2, 3, 4)$, and
 $(p_1, p_2, p_3) = (1, 2, 5)$.
Find solution using dynamic approach.
- Q. 4. a) Explain 8-queen problem. Write an algorithm using backtracking to solve this problem. 10
- Q. 4. b) Explain graph coloring algorithm with an example. 10
- Q. 5. a) Explain LC branch and bound with an example. 10
- Q. 5. b) With suitable example explain difference in pattern matching techniques of Brute Force and Knuth-Morris-Pratt Algorithm. 10
- Q. 6. a) Perform Radix sort on the following set of data 10
 $85, 26, 12, 15, 48, 55, 92, 4, 28, 79, 17$
(Give the output at every stage).
- Q. 6. b) Find the minimum cost spanning tree for the following graph using Prim's algorithm. 10



- Q. 7. Write short note on following (Any four). 20
- Q. 7. a) Optimal storage on tapes.
- Q. 7. b) Flow shop scheduling
- Q. 7. c) Sum of subsets
- Q. 7. d) 15 Puzzle
- Q. 7. e) Tries