

28-4-15(E)

K. J. Somaiya College of Engineering, Mumbai-77
 (Autonomous College Affiliated to University of Mumbai)
 Semester: January 2015 - April 2015

Max. Marks: 100

Duration: 3 hr

End Semester Exam

Class: S. E.

Semester: IV

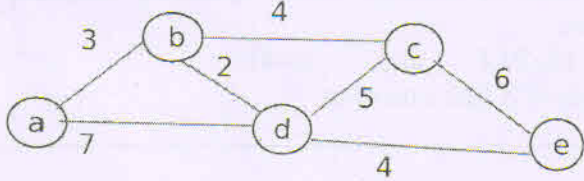
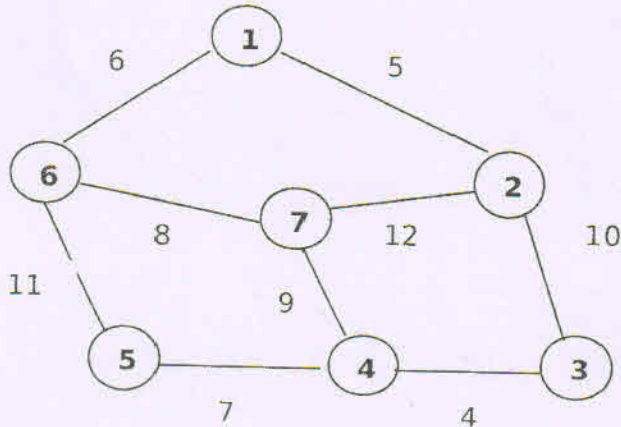
Name of the Course: Analysis of Algorithms

Branch: Computer

Course Code: UCEC402

Instructions:

- (1) All Questions are compulsory
- (2) Figures to the right indicate full marks
- (3) Assume suitable data if necessary but justify the same

Question No.		Max. Marks
Q1(a)	Explain Big-Oh, Omega and Theta Notations with the help of example. How do we analyze and measure time and space complexity of algorithm?	10
(b)	Write an algorithm for merge sort and then sort the following numbers using merge sort. Give the output of each pass. 25, 16, 19, 24, 46, 57, 97, 33	10
Q2(a)	For the following graph find the single source shortest path using Dijkstra's algorithm of Greedy approach.  <p align="center">OR</p>	10
Q2 (a)	For the given graph find the minimum spanning tree using Prim's and Kruskal's Algorithm. 	10

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Q2 (b)	Explain single source shortest path using Dynamic Programming. Write an algorithm for the same	10
	OR	
Q2 (b)	Describe Traveling Salesperson Problem. Explain how to solve using Dynamic Programming Method.	10
Q3 (a)	Write algorithm of Job sequencing with Deadlines. Solve the following problem $n=5$. (P1, P2, P3, P4, P5)=(20, 15, 10, 5, 1) (d1, d2, d3, d4, d5)=(2, 2, 1, 3, 3)	10
(b)	Explain Strassen's Matrix multiplication and derive its time complexity	10
Q4 (a)	Explain and write Knuth Morris Pratt Algorithm with an example	10
	OR	
Q4 (a)	Find Longest common subsequence of given two strings S1= { B A T A } S2= { T A T A }	10
Q4 (b)	Explain N-Queen problem using Backtracking Algorithm.	10
	OR	
Q4 (b)	Write algorithm for Sum of Subsets. Solve following problem by drawing state space tree. S= { 5, 9, 12, 15, 20 } and $m=41$. Find all possible subsets of S that sum to m	10
Q5	Write short notes on the following: (a) Flow Shop Scheduling (b) Differentiate between Greedy and Dynamic Programming (c) Graph Coloring (d) String Matching with finite automata	20