Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(An Autonomous Institute Affiliated to University of Mumbai)

Re- Examination

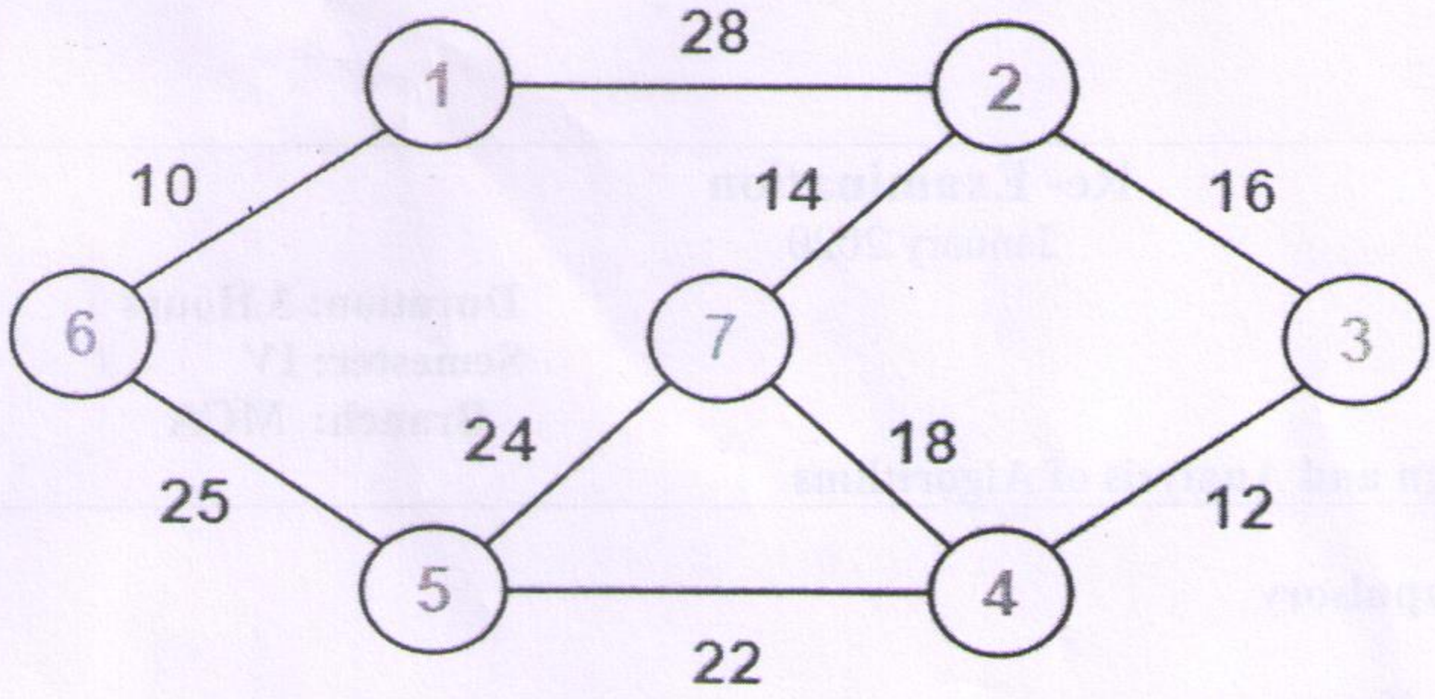
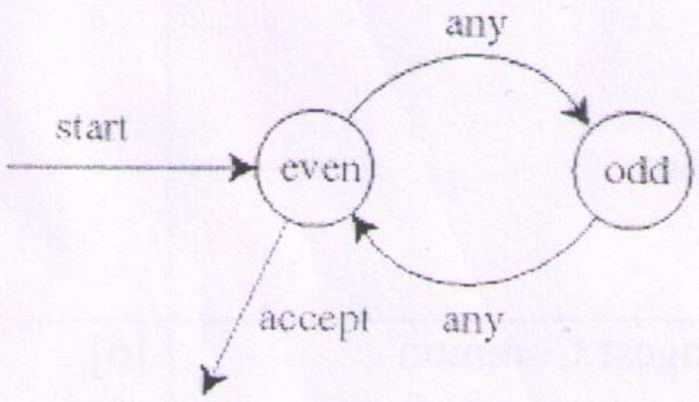
January 2020

Max. Marks: 60 | **Duration: 3 Hours**
Class: SYMCA | **Semester: IV**
Course Code: MCA43 | **Branch: MCA**
Name of the Course: Design and Analysis of Algorithms

Instructions:

(1) All questions are compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

QN			Marks	CO's
Q.1	a.	Discuss the Role of Algorithms in Computing.	[6]	CO-1
	b.	Explain Vertex cover problem give examples in detail [OR] Compare and contrast P and NP problems.	[6]	CO-6
Q.2	a.	Derive the complexity of Apply quick sort algorithm	[6]	CO-2
	b.	Explain in detail Linear Search algorithm with a numeric example. Provide complete analysis of the same. [OR] Find the multiplication of matrices using Strassen's algorithm. A= 4 6 B= 9 8 7 8 , 10 6	[6]	CO-2
Q.3	a.	Consider the String1: 10010011 String2: 10110. Find Longest Common Subsequence with its length.	[6]	CO-3
	b.	Given a chain of four matrices, A1, A2, A3, A4 (5, 7, 3, 9 ,8). Find the cost of matrix multiplication.	[6]	CO-3
Q.4	a.	Discuss the Backtracking technique (Definition, Working, Performance, Analysis, Example) [OR] Discuss the knapsack Problem. What technique is used to solve the problem? Write the algorithm to solve above problem	[6]	CO-4
	b.	Discuss Travelling salesman problem. What technique is used to solve this problem. Give the analysis of it.	[6]	CO-4

Q.5	a.	Find minimum Spanning Tree for following graph using Kruskals's algorithm.  	[6]	CO-5
	b.	Illustrate the various string matching algorithm. Explain KMP algorithm with suitable example. OR For following deterministic finite automaton obtain 5 –tuple DFA Generate 3 strings which are accepted by this DFA  	[6]	CO-5