

6E3202

Roll No. _____

Total No. of Pages : 4

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B.Tech VI Semester (Main/Back) Exam. May, 2012

Computer Engineering

6CS2 Design and Analysis of Algorithms

Common to CS & IT

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Question carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clerly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. _____ Nil _____

2. _____ Nil _____

Unit-1

- 1 (a) Describe the various types of notations with example? 8
- (b) Solve the following recurrence relations and find their complexities using master method
- (i) $T(n) = 2T(\sqrt{n}) + \log_2 n$ 4
- (ii) $T(n) = 4T(n/2) + n^2$ 4

Or

- 1 (a) Find the optimal merge pattern for the given values 35, 15,20,40,10 8
- (b) Illustrate the operation to construction of min heap tree for given values 10,20,30,1,2,3,4,11,21,31,41 8

Unit - II

- 2 (a) Find optimal solution for given data by Knapsack problem

Consider $n = 5$, $(W_1, W_2, W_3, W_4, W_5) = (5, 4, 6, 2, 1)$

$(P_1, P_2, P_3, P_4, P_5) = (5, 2, 2, 4, 5)$ and $M = 12$ 10

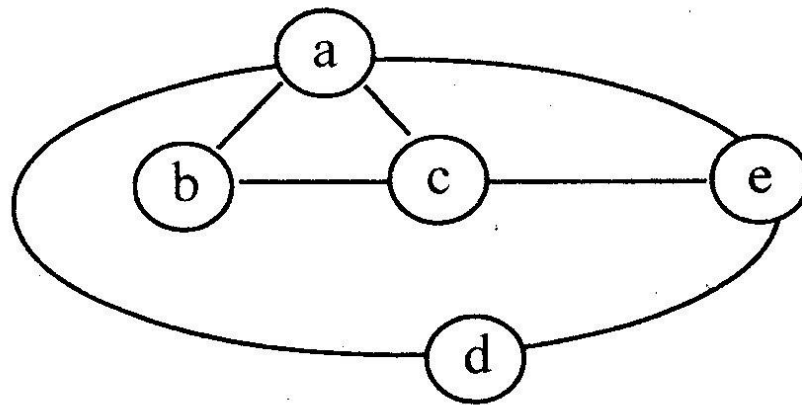
- (b) Explain the matrix chain multiplication algorithm. 6

Or

2. (a) Solve the TSP problem for the following cost matrix 8

	x	y	z	w
x	A	10	15	20
y	5	A	9	10
z	6	13	A	12
w	8	8	9	A

- (b) Find a Hamiltonian circuit using back tracking method for the following graph $G = (V, E)$ 8



Unit - III

- 3 (a) Explain the prefix function for a string with an example and write KMP matcher algorithm? 8

- (b) Write short notes on the following:

- (i) Quadratic assignment problem. 4

(ii) Boyer Moore algorithm. 8

Or

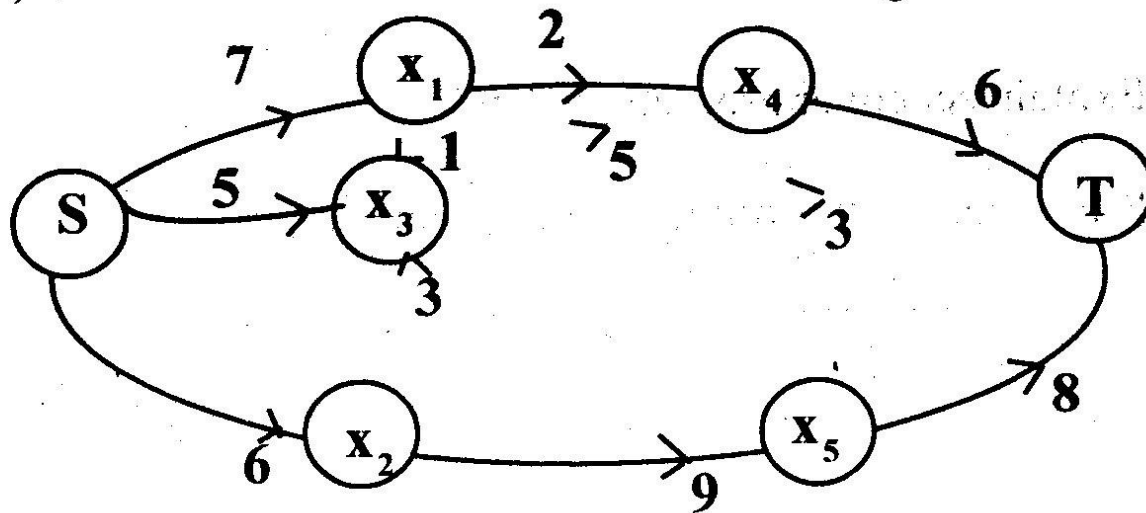
3. (a) Describe Naive string matching algorithm in detail? 8

(b) The Rabin-Karp Algorithm is suitable for string pattern matching. Justify the answer. 8

Unit - IV

4. (a) Explain the Las Vegas Algorithm with an example? 8

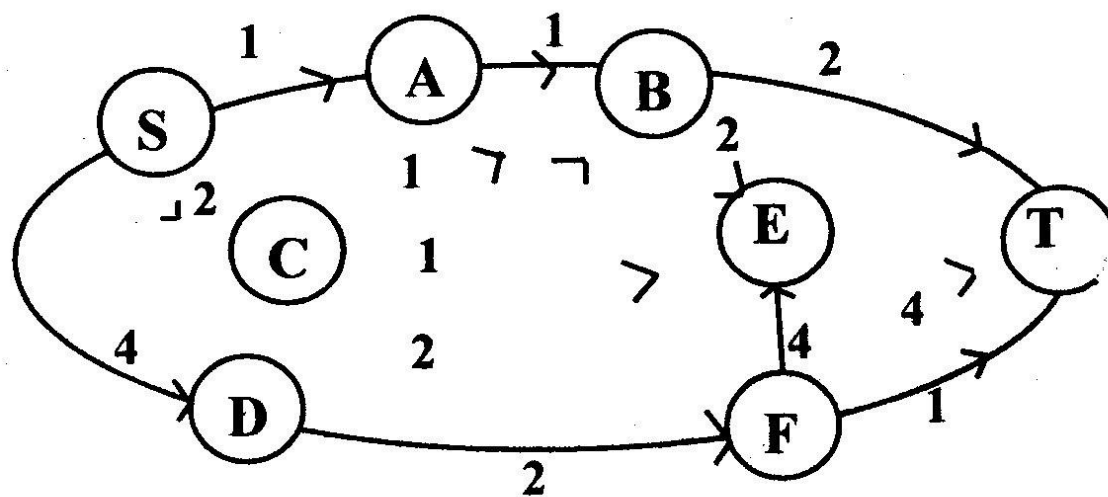
(b) Construct the Min-Cut for the following network. 8



8

Or

(a) Find the maximum flow for the following flow network using ford-fulkerson method. 8



- (b) Explain the flow networks and Augmenting paths? 8

Unit - V

- 5 (a) what is the use of cook's theorem? Prove it with an example. 8

- (b) Define the terms P, NP, NP complete and NP hard problems 2x4=8

Or

- 5 (a) Explain set cover problem in detail? 8

- (b) Prove that TSP problem is NP- complete 8
