Department of Artificial Intelligence & Data Science

III Year V Semester

5AID4-05: Analysis of Algorithm

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

ASSIGNMENT-I

Q.1.Solve the following recurrence relation using Master's theorem- a) T(n) = 3T(n/2) + n2 b) T(n) = 8T(n/4) – n2logn c) T(n)=2T(n1/2) +log n	BLT-2	CO-1
Q.2. Show all the step of Strassen's matrix multiplication algorithm to multiply the following matrices. $X=\begin{pmatrix}3 & 4\\ 2 & 8\end{pmatrix}$ $Y=\begin{pmatrix}4 & 5\\ 9 & 6\end{pmatrix}$	BLT-5	CO-1
Q.3 Using quick sort algorithm sort the following sequence A={3,19,9,5,12,8,7,4,21,2,6,11}	BLT-4	CO-1
Q.4 Explain asymptotic notations with suitable example.	BLT-2	CO-1
Q.5. Explain merge sort. Using merge sort algorithm sort the following sequence. A= {38, 42, 24, 68, 45, 88, 12, 32}	BLT-4	CO-1

ASSIGNMENT-II

Q.1. Find optimal parenthesization of matrix chain product whose sequence of dimension is (4,10,6,4,5).	BLT-5	CO-2
Q.2. Find out the solution generating by job sequencing. When n=7 with following Profit and Deadline. Profit(p1,p2….p7)=(3,5,20,18,1,6,30) Deadline(d1,d2…..d7)=(1,3,4,3,2,1,2)	BLT-5	CO-2
Q.3. Explain 0/1 Knapsack problem with suitable example.	BLT-2	CO-2
Q.4. X=<a,a,b,a,b> Y=<b,a,b,b>.If Z is an LCS of X and Y ,then find Z using dynamic programming.	BLT-4	CO-2
Q.5. Explain optimal merge pattern with suitable example.	BLT-2	CO-2

ASSIGNMENT-III

Q.1. Describe Naïve Pattern Matching Algorithm.	BLT-1	CO-3
Q.2. Explain Rabin Karp Method with suitable example.	BLT-2	CO-3
Q.3. Explain both the heuristics of Boyer – Moore Algorithm with suitable example.	BLT-2	CO-3
Q.4. Write short note on Quadratic assignment problem.	BLT-2	CO-3
Q.5. What is backtracking? Write an algorithm to solve N – Queens problem. Trace it for N=6 using back tracking approaches.	BLT-4	CO-3

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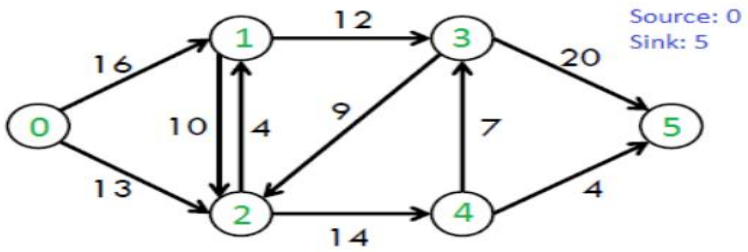
ASSIGNMENT-IV

Q.1. What are the randomized algorithms? Differentiate Las- Vegas algorithm and Monte Carlo algorithm.	BLT-1	CO-4
Q.2. Describe multi - commodity flow network.	BLT-2	CO-4
Q.3. Explain the following term: Flow Network, Augmenting Paths, Residual Network and capacity in network.	BLT-2	CO-4
Q.4. a) Find maximum flow in below network b) Find the corresponding minimum cut and check that its capacity is same as that value of maximum flow found in (a part). 	BLT-4	CO-4
Q.5. Briefly explains flow shop scheduling.	BLT-2	CO-4

ASSIGNMENT-V

Q.1. Explain the following terms:- i) P ii) NP	BLT-2	CO-5
Q 2. Explain NP Complete?	BLT-2	CO-5
Q.3 What is COOK's Theorem.	BLT-1	CO-5
Q.4 Explain vertex cover problem with suitable example.	BLT-2	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.