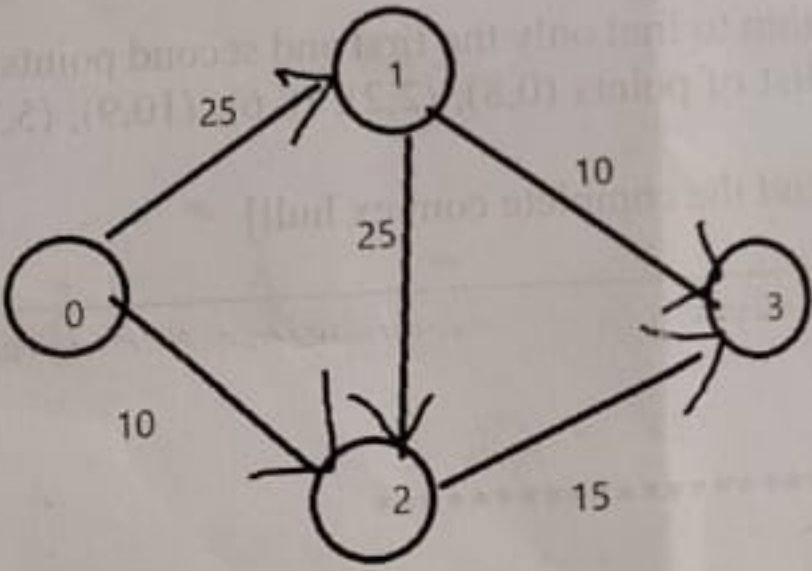


Programme Name & Branch : MTech
Course Code and Course Name : Design and Analysis of Algorithms & MCSE502L
Faculty Name(s) : Dr. Varalakshmi
Class Number(s) : VL2024250108046
Date of Examination : 15/10/2024
Exam Duration : 90 minutes
Maximum Marks: 50
Answer All Questions

Course Outcomes

3. Demonstrate the string matching and network flow algorithms relating to real-life problems
4. Understand and apply geometric algorithms

Q. No	Question	M	CO	BL
1.	Demonstrate the use of finite automata for string matching, with the pattern 'bcaad' and text 'aaebcaaeaaebcada'.	10	3	3
2.	a) Rabin Karp algorithm uses the hash value of the previous window to calculate the hash of the next window in the input string. Justify this by generating the hash values of the various windows of the example text given below. Pattern = "CCA" and text = "BCCAAC". Assume the maximum number of characters to be 3 and the prime number to be 7. [Note: String comparison is not required to be done. Only generate the hash values] b) Assume the augmenting paths are selected in the following order using a particular heuristic, to find the maximum flow from source to sink in the given directed graph. i) 0->1->2->3 ii) 0->1->3 Demonstrate the significance of residual matrix to find the maximum flow even by following any order to select the augmenting paths. 	5	3	4
3.	Implement Push-relabel algorithm to find the maximum amount of flow that can be sent from the source to the sink in the following graph.	10		



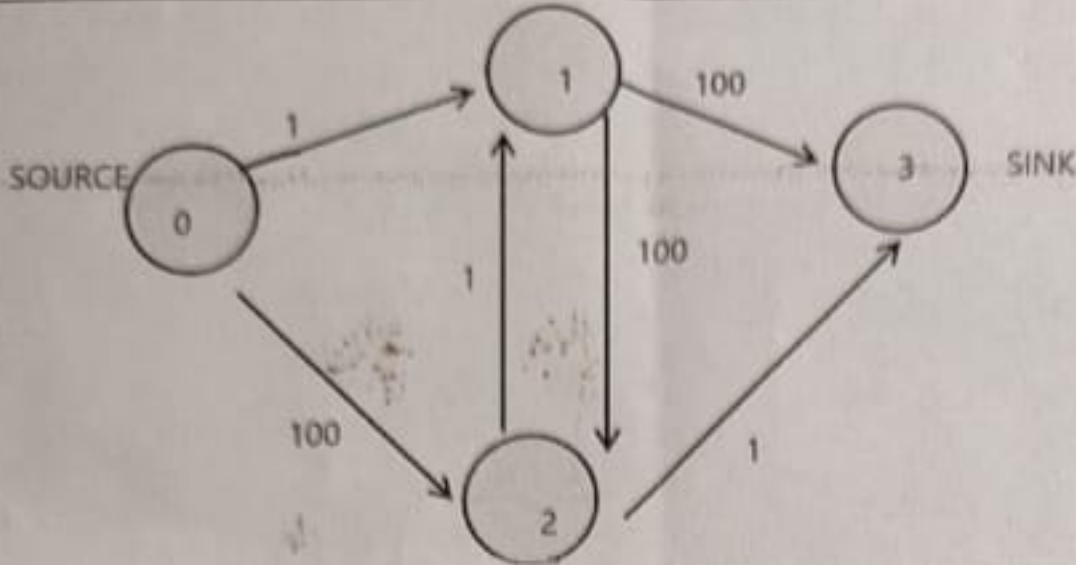
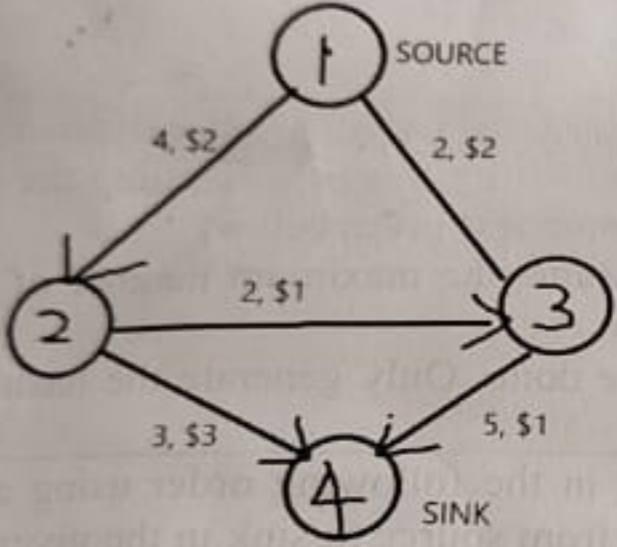
VIT

Vellore Institute of Technology
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REG.NO.:

SLOT: C1 + TC1

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

			3	3
4.	Use the following graph to demonstrate how cycle-cancelling algorithm helps to find the minimum-cost maximum flow in a network. Enumerate the cost of flow before and after applying the algorithm. 	10	3	3
5.	a) Determine if the two line-segments L1 and L2 intersect or not whose end points are given below. L1: (2,1) and (6,5) L2: (7,6) and (8,7)	3		
	b) Apply Jarvis March algorithm to find only the first and second points of the convex hull from the list of points (0,8), (2,2), (8,6), (10,9), (5,7), (5,10), (8,13), (4,12). [Note: Do not proceed to find the complete convex hull]	7	4	2

