

Code: 20AM6421, 20DS6421

II B.Tech - II Semester – Regular Examinations – MAY 2024**ADVANCED DATA STRUCTURES
(HONORS in AIML, DS)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

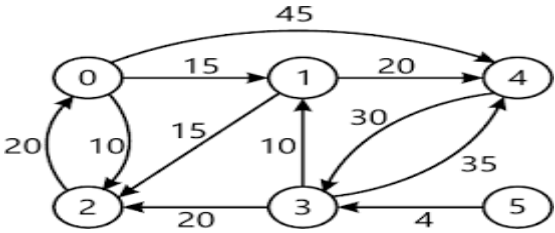
2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	What is hashing? Discuss about the Rehashing methods with examples.	L2	CO1	7 M
	b)	Construct the open hash table and closed hash table for the input: 30, 20, 56, 75, 31, 19 using the hash function $h(k) = k \bmod 9$.	L3	CO1	7 M
OR					
2	a)	What do you mean by collision and how can you handle it by using linear probing.	L1	CO1	7 M
	b)	When to use extendable hashing? Explain extendable hashing with example.	L2	CO1	7 M
UNIT-II					
3	a)	Explain about the procedure for inserting an element into the Heap.	L2	CO2	7 M
	b)	Construct a binary heap with the following data 15, 11, 9, 8, 7, 10, 18.	L3	CO2	7 M

OR					
4	a)	Write an algorithm to insert an element in max heap? Trace the above algorithm for the following elements? 1, 2, 3, 4, 5, 6, 7, 8.	L3	CO2	7 M
	b)	While creating the heap for above data will fall in best case or worst case? Interpret your answer.	L3	CO2	7 M
UNIT-III					
5	a)	What are the different types of imbalances that occur while deleting a node from AVL trees? Explain with example.	L2	CO3	7 M
	b)	How they are rectified? Explain with an example for each type of imbalance.	L2	CO3	7 M
OR					
6	a)	Explain three possible cases for inserting a node in the 2-3 Trees? Construct 2-3 Tree with the following data 50, 20, 60, 90, 40, 100, 10.	L2	CO3	7 M
	b)	Write Algorithm for 2-3 Tree deletion and discuss its analysis.	L3	CO3	7 M
UNIT-IV					
7	a)	How to find shortest path between vertices using all pairs shortest path Floyd's algorithm.	L4	CO4	7 M
	b)	Write a pseudocode for weighted shortest-path algorithm for Bellman Ford. Explain with example.	L3	CO4	7 M

OR					
8	a)	Develop an algorithm to find the shortest path from a Single Source to all other vertices in a graph using Dijkstra's algorithm.	L3	CO4	7 M
	b)	Apply Dijkstra's algorithm on the below graph. 	L3	CO4	7 M
UNIT-V					
9	a)	Analyze an algorithm that will efficiently search a given text for a pattern and record the number of times the keyword found. Given string “ SHE SELLS SEA SHELLS ON THE SEA SHORE” and Pattern String “SHELL”.	L4	CO5	7 M
	b)	Which pattern matching algorithm avoids the repeated comparison of characters? Discuss with suitable example.	L2	CO5	7 M
OR					
10	a)	What are the drawbacks of simple union and find algorithms? How to overcome those drawbacks? Explain with example.	L2	CO5	7 M
	b)	Describe the path compression with example.	L1	CO5	7 M