

I SEMESTER M.TECH. (CSE/CSIS) END SEMESTER MAKEUP EXAMINATIONS, Jan 2024

Advanced Data Structures and Algorithms [CSE 5113] REVISED CREDIT SYSTEM (05/01/2024)

	Time: 3 Hours MAX. MARK	(S: 50
	Instructions to Candidates:	
	Answer ALL the questions.	
	Missing data, if any, may be suitably assumed.	
Q.No	Questions	Marks
1A	Compute the amortized costs of operations push(S, k), Pop(S) and Multipop(S, k) on stack S using aggregate and accounting methods.	3
1B	Compute the amortized cost of incrementing a binary counter using potential method	2
1C	Construct B-Tree by successive insertion starting from the empty B-Tree for the list 42, 45, 48, 49, 52, 56, 58, 60, 61, 64, 67, 70, 72, 76, 80, 85, 88, 90, 92, 96, using single pass with degree t=2.	5
2A	How to decreases the key of a node x in a Binomial Heap	2
28	Extract the node with minimum key from the following binomial heap (Figure 2B) $\begin{array}{c} + & & & \\ + & & & \\ & & & & \\ &$	5
	Figure 2B.	
$2\overline{C}$	How to decrease the key of node <i>x</i> to <i>k</i> in a Fibonacci heap H.	3



4C	Compare Disjoint set with the BFS for finding the connected components	2
5A	Apply Floyd-Warshall algorithm for the graph given in figure 5A.	5
5B	Find time complexity of Johnsons algorithm and Floyd-Warshall algorithm for finding the all pairs shortest path.	3
5C	Identify the number of fork calls required to create 64 paths of control.	2