

Code: 20CS3402

**II B.Tech - II Semester – Regular / Supplementary Examinations
MAY - 2023**

**ADVANCED DATA STRUCTURES
(COMPUTER SCIENCE & ENGINEERING)**

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)	Apply linear probing hashing technique to insert the following elements 45, 35, 16, 86, 26, 19, 32, 18 into an empty hash table with hash function $f(x)=x\%12$.	L3	CO2	7 M
	b)	Illustrate Extendible Hashing technique?	L3	CO2	7 M
OR					
2	a)	Demonstrate double hashing with suitable example.	L3	CO2	7 M
	b)	Define hash function. Demonstrate universal hashing.	L3	CO2	7 M
UNIT-II					
3	a)	Develop a code to implement insertion operation of max priority heap.	L3	CO3	7 M

	b)	The elements 12,15,18,6,14,20,11,22,16 are inserted one by one in the given order into a Min-Heap. What is the resultant Min-Heap.	L3	CO3	7 M
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OR

4		What is binomial queue.Explain binomial queue operations with suitable example.	L2	CO1	14 M
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UNIT-III

5	a)	Demonstrate the deletion procedure in AVL tree with example.	L3	CO3	7 M
	b)	Construct a 2-3 tree with the following data items 5,6,8,10,12,15,45,75,23,11,9.	L3	CO3	7 M

OR

6		List the properties of Red-Black tree. Construct a red-black tree with the following elements 15,20,25,23,14,89,74,65,28,36.	L3	CO3	14 M
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UNIT-IV

7	a)	<p>Apply dijkstra's algorithm on the above graph.</p>	L3	CO3	10 M
	b)	Discuss about topological sorting.	L2	CO1	4 M

OR

8	a)	Show the Floyd Warshall's algorithm with example.	L3	CO3	7 M
	b)	Infer can Bellman-ford algorithm applied on directed acyclic graph with suitable example.	L2	CO1	7 M
UNIT-V					
9	a)	Explain about simple union and find algorithm.	L4	CO4	7 M
	b)	Apply the steps in Rabin-Karp pattern matching algorithm with an example for both successful and unsuccessful cases.	L3	CO2	7 M
OR					
10		Explain Knuth-Morris string matching algorithm with suitable example.	L4	CO4	14 M