Code No.: R22CS58101PC | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–M.TECH–I–Semester End Examinations (Supply) - September- 2023
ADVANCED DATA STRUCTURE AND ALGORITHMS
(CSE)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(10 Marks)**

1. a)	List the properties of binomial heap.	[1M]
b)	Define Fibonacci Heaps.	[1M]
c)	List out the methods to calculate hash key.	[1M]
d)	Define hashing.	[1M]
e)	Outline OBST for the given elements 6,11,4,66,45.	[1M]
f)	Explain 2-3 tree.	[1M]
g)	Compare standard and compressed tries.	[1M]
h)	Define KMP.	[1M]
i)	Illustrate the steps involved in DFS.	[1M]
j)	Define dynamic programming.	[1M]

PART-B **(50 Marks)**

2.	Illustrate the leftist tree with an example.	[10M]
	OR	
3.	Demonstrate Fibonacci Heap by constructing its structure.	[10M]
4.	What do you mean by a hash table and a hash function? Explain the following hash functions with an example (i). Division method. (ii). Mid square (iii) Folding method.	[10M]
	OR	
5.	Discuss how collision can be resolved using quadratic probing while inserting following keys in Hash table of size 10. 97, 40, 15, 22, 17, 89, 67.	[10M]
6.	Construct an AVL Tree with following data: 10 15 9 12 13 79 45 36 22.	[10M]
	OR	
7.	Justify your answer how 2-3 tree is a B-trees in detail.	[10M]
8.	Construct an empty trie and insert the words "and, ant dad, do ", write an algorithm for insertion.	[10M]
	OR	
9.	Explain Naïve string-matching algorithm with example.	[10M]
10.	How will find the shortest path between two given vertices using Dijikstra's algorithm? Develop the pseudo code with an example.	[10M]
	OR	
11.	Analyze in detail about topological sorting with an example.	[10M]

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