Code No.: CS203ES | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–B.TECH–II–Semester End Examinations (Supply) - September- 2023
DATA STRUCTURES
(Common for all)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 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 **(20 Marks)**

1. a)	What is the difference between array and linked list?	[2M]
b)	What is abstract data type?	[2M]
c)	What is meant by hashing?	[2M]
d)	Write the difference between linear probing and quadratic probing.	[2M]
e)	What is an AVL tree explains with example?	[2M]
f)	What is binary search tree?	[2M]
g)	Differentiate BFS and DFS.	[2M]
h)	What is meant by heap tree?	[2M]
i)	Define pattern matching.	[2M]
j)	Define trie.	[2M]

PART-B **(50 Marks)**

2.a)	How can we do the deletion operation from a linked list?	[5M]
b)	Write the benefits and limitations of linked list.	[5M]
	OR	
3.a)	Describe the conditions of overflow and underflow in a queue. Discuss the applications of queues.	[5M]
b)	Differentiate between stack and queue with example.	[5M]
4.	How does skip list representation of a dictionary can be done? Explain in detail with an example	[10M]
	OR	
5.	Explain collision resolution techniques in hashing with suitable examples.	[10M]
6.a)	Discuss in detail about red-black trees.	[5M]
b)	Mention with an example how to insert and delete a node or element into a binary search tree.	[5M]
	OR	
7.	Explain in detail about AVL tree insertion and deletion with an example.	[10M]
8.a)	Explain heap sort with an example.	[5M]
b)	Explain about merge sorting with an example.	[5M]
	OR	
9.	How a graph is traversed using depth first search? Explain with example.	[10M]
10.	Describe the Knuth-Morris-Pratt algorithm for pattern matching.	[10M]
	OR	
11.	Explain the following i) Tries. ii) Compressed Tries. iii) Suffix tries.	[10M]

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