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

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–B.TECH–II–Semester End Examinations (Supply) - December- 2025
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)	List the applications of the stacks.	[2M]
b)	What are the advantages and disadvantages of linked list?	[2M]
c)	What is linear list representation?	[2M]
d)	What are the properties of skip list?	[2M]
e)	What are the categories of AVL rotations?	[2M]
f)	Define splay tress.	[2M]
g)	List the applications of graphs.	[2M]
h)	Write the worst case time complexity of merge sort.	[2M]
i)	List the advantages of suffix tries.	[2M]
j)	What is the best case of Boyer-Moore algorithm?	[2M]

PART-B   (50 Marks)

2.a)	Explain the Singly Linked Lists with an example.	[5M]
b)	How do circular queues help to overcome the disadvantages of linear queues? Explain.	[5M]

OR

3.	Explain about queue and write short notes on queue applications.	[10M]

4.	Explain in detail about double hashing and rehashing in collision resolution methods.	[10M]

OR

5.	Explain in detail about linear probing and quadratic probing.	[10M]

6.	Explain briefly about the LR rotation in AVL Trees.	[10M]

OR

7.	What is a binary search tree? Write an algorithm for inserting and deleting a node in a binary search tree.	[10M]

8.	Differentiate between BFS and DFS traversals. Take an example graph and implement the BFS traversal.	[10M]

OR

9.	Perform heap sort algorithm for (10 15 6 2 25 18 16 2 20 4).	[10M]

10.	Explain the Knuth-Morris-Pratt algorithm.	[10M]

OR

11.	Discuss the Pattern matching algorithm.	[10M]

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