ACE Engineering College
(with a Difference in Excellence)
An AUTONOMOUS Institution

Question Paper Code: CS302PC

ACE-R20

Semester End Examination
II B. Tech- I Semester- MARCH-2022
DATA STRUCTURES
(Common to CSE,IT,CSM,CSD,CSO)

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

H. T. No										

*Answer any 5 **Questions out of 8 Questions** from the following*

Q.No	Question	Marks
1. a)	Design a program to implement all the possible operations on a stack using arrays.	6
b)	Define ADT. Demonstrate the representation of data in a singly linked list.	8
2. a)	Develop a program to perform the three possible ways of deletion operation on a singly linked list.	6
b)	Examine the insertion operation and deletion operation on a queue.	8
3. a)	Show the structure of linear list for dictionary and discuss the process for insertion of new node in the dictionary.	7
b)	Inspect various types of hash functions that are used to place the record in the hash table	7
4. a)	Analyze all the possible operations of skip list with suitable examples.	8
b)	List out the applications of hashing and explain the technique of extendible hashing.	6
5. a)	Illustrate the basic operations performed on a binary search tree.	11
b)	Calculate the maximum/minimum height for an AVL tree of 3 nodes, 5 nodes, and 7 nodes.	3
6. a)	Demonstrate the usage of the graph representation methods.	6
b)	Construct a program to implement the technique of merge sort.	8
7. a)	Interpret the mechanism of the graph traversal methods.	7
b)	Sort the following elements using heap sort: 25 57 48 38 10 91 84 33	7
8. a)	Classify the Tries and summarize the properties of each trie.	6
b)	Assess the role of Knuth-Morris-Pratt algorithm for pattern matching.	8