Hall Ticket No | | | | | | | | | | | Question Paper Code: ACSB03

INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)

B.Tech III Semester End Examinations (Regular), February – 2021

Regulation: IARE–R18

DATA STRUCTURES

Time: 3 Hours **(CSE | IT | ECE | ME | CE)** **Max Marks: 70**

Answer any Four Questions from Part A
Answer any Five Questions from Part B

PART – A

1. Briefly explain the classification of data structures. **[5M]**
2. What is a queue? Write the algorithm for insert operations in queue using an array. **[5M]**
3. Explain how a node is to be removed from a single linked list with implementation. **[5M]**
4. List and explain various graph representations with an example in detail. **[5M]**
5. What is open addressing hashing? Describe any one technique. **[5M]**
6. Compare and analyze merge sort and quick sort algorithms in detail. **[5M]**
7. Explain the procedure to delete an element from a circular queue using array implementation. **[5M]**
8. Write and trace the algorithm for depth first search with suitable example. **[5M]**

PART – B

9. State and explain the algorithm for bubble sort. With suitable examples, sort the elements using bubble sort. **[10M]**
10. Distinguish between linear search and binary search. State and explain the algorithm for binary search with an example. **[10M]**
11. Implement an algorithm to insert and delete an element from double ended queue(DEQUEUE). **[10M]**
12. Convert the expression to postfix form (A + B) * (C - D). Evaluate the given expression 53 + 82 - *. **[10M]**
13. What is stack ADT? Explain the implementation of stack using Python list and a linked list. **[10M]**
14. Demonstrate the implementation for inserting a value into a sorted linked list using python. **[10M]**
15. Write an algorithm for inorder, preorder and post order with an example. **[10M]**
16. What is full binary tree, complete binary tree, perfect binary tree and skewed binary tee? Discuss with an example. **[10M]**
17. Construct a binary search tree with the following key values and traverse the tree in three different ways 43, 10, 79, 90, 12, 54, 11, 9, 50. **[10M]**
18. Write an algorithm and explain the operation of single and double rotation in an AVL tree with an example. **[10M]**