SECTION-A **2marks Questions**

1. How do you test for an empty queue?

1. Write down the steps to modify a node in linked lists**.** **CO1**
2. Difference between arrays and lists. **CO1**
3. What are the various Operations performed on the Stack? **CO2**
4. Define Circular Queue. **CO2**
5. List out the steps involved in deleting a node from a binary search tree**.** **CO3**
6. List out few of the Application of tree data-structure. **CO3**
7. When a graph said to be weakly connected? **CO4**
8. .What are the two traversal strategies used in traversing a graph? **CO4**
9. . State the logic of bubble sort algorithm. **CO5**
10. Which sorting algorithm is easily adaptable to singly linked lists? Why **CO5**

SECTION-B **16 MARKS**

1. Explain the insertion operation in linked list. How nodes are inserted after a specified node**.** **CO1 5 MARKS**

2. Write an algorithm to insert a node at the beginning of list? **CO1 5 MARKS**

3. Write the algorithm for converting infix expression to postfix (polish) expression? **CO2 5 MARKS**

4. What is a DeQueue? Explain its operation with example**?** **CO2 5MARKS**

5. Discuss and explain in detail about the real-world applications based on Data Structure and algorithm**.** **CO6 6 Marks**

6. Discuss about latest research on efficient Data Structutres. **CO6**

Also explain :-

a) Probabilistic Data Structures
b) Dynamic Data Structures
c) Distributed Data Structures

SECTION C **8 MARKS**

1. Explain INORDER & POSTORDER traversals. Construct an expression tree for the expression (a+b*c) + ((d*e+f)*g). Give the outputs when you apply inorder, preorder and postorder traversals. **CO3**

2. Write shorts notes on:- **CO3**

a) Red-Black Tree

b) AVL Tree

c) B+ Tree

d) Threaded binary Tree

3. Explain Breadth First Search algorithm with example? **CO4**

4. Explain Depth first and breadth first traversal? **CO4**

5**.** Write an algorithm to implement Bubble sort with suitable example. **CO5**