

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA – SEMESTER -II EXAMINATION –WINTER-2021

Subject Code: 629401**Date: 29/12/2021****Subject Name: Data Structures****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Answer the following questions. **07**
1. Define data structure.
 2. Is Queue a priority queue? Justify?
 3. Mention variations of the queue data structure.
 4. Give two applications of graphs?
 5. List operations performed on a stack.
 6. What is the complexity of binary search algorithm?
 7. Write two simple hash functions?
- (b)** Discuss various methods to resolve hash collision with suitable examples. **07**
- Q.2 (a)** Explain the data structure classification. **07**
- (b)** Explain Selection sort with algorithm. **07**
- OR**
- (b)** Different between Linear Data Structures vs Linear Data Structures. **07**
- Q.3 (a)** What is Tree Node? List the BST Basic Operations and discuss it. **07**
- (b)** Explain Operations on data structure with operation. **07**
- OR**
- Q.3 (a)** Describe the concept of Linear Data Structures with array Basic Operations. **07**
- (b)** Explain Doubly Linked List with basic operations. **07**
- Q.4 (a)** Explain Load Factor and Rehashing in Hashing works. **07**
- (b)** Discuss between Bubble sort and Insertion sort in details. **07**
- OR**
- Q.4 (a)** Enlist and briefly explain various application of stack. **07**
- (b)** Discuss various rehashing techniques. **07**
- Q.5 (a)** Write an algorithm to perform various operations (insert, delete and display) for simple queue. **07**
- (b)** Differentiate between Stack and Queue. **07**
- OR**
- Q.5 (a)** What is binary tree traversal? What are the various traversal methods? Explain any two with suitable example. **07**
- (b)** List advantages and disadvantages of Breadth First Search and Depth First Search. **07**
