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**Department of Computer Science and Engineering**

**Unit -1**

1. Define Class and object with suitable examples.
2. Define ADT? Create ADT for Single Dimensional array.
3. Create ADT for Polynomial and perform addition of two polynomials.
4. Define sparse matrix and represent sparse matrix using Array ADT.

**Unit – II**

1. Write the purpose of template with suitable example.
2. Create ADT for stack and queue operations.
3. Define and implementation of sub typing with example.
4. Construct postfix notation for given infix notation  
 $(x + y) * z / (w * u)$
5. Illustrate arithmetic expression.

**Unit - III**

1. Explain self referential structures and sub types.
2. Create single linked list with two fields (sno and sname).
3. Create double linked list using and perform basic operations.
4. Write a program to search an element from single linked list.
5. Write a program to merge two single linked lists.
6. Write a program to sort the data in given linked list.
7. Write a program to reverse single linked list.

**Unit - IV**

1. Write ADT for binary tree.
2. Explain recursive and non recursive Tree Traversal techniques.
3. Illustrate threaded binary tree.
4. Illustrate min heap and max heap.
5. Construct Binary Search Tree for the following data.  
10 25 2 32 54 89 78 81

**Unit – V**

1. Represent a graph using Arrays and linked list.
2. Explain Graph traversal algorithms with suitable examples.
3. Construct minimum spanning tree for given graph.
4. Explain all pairs shortest path algorithm.
5. Define transitive closure. Explain Warshall algorithm with an example.

**Unit – VI**

1. Illustrate recursive and iterative merge sort.
2. Illustrate quick sort.
3. Illustrate Heap sort.