UNIT I: Introduction to Algorithms

1. **Time Complexity and Space Complexity**
2. **Asymptotic Analysis**
   - Growth rates
   - Common bounds (constant, logarithmic, linear, polynomial, exponential)
3. **Master Theorem**
4. Substitution Method
5. Iteration Method
6. **Time Complexity of Recursive Algorithms**
7. Problem-solving and decision-making
8. Role of data structure in algorithm design
9. Basic algorithmic structures of problem-solving
10. **Optimization algorithms** (constraints, solution space, feasible regions)
11. **Sorting Algorithms**:
    - Selection Sort
    - Bubble Sort
    - Insertion Sort
12. **Sorting in Linear Time**:
    - Count Sort
13. **Searching Algorithms**:
    - Linear Search

UNIT II: Divide and Conquer & Greedy Algorithms

1. **Overview of Divide and Conquer Algorithms**
2. **Quick Sort**
3. **Merge Sort**
4. **Heap Sort**
5. Binary Search
6. Matrix Multiplication
7. Convex Hull and Searching
8. Closest Pair of Points
9. **Greedy Algorithms**:
   - Huffman Coding
   - **Knapsack Problem**
10. **Minimum Cost Spanning Trees**:
    - Prim's Algorithm
    - Kruskal's Algorithm
11. **Single Source Shortest Paths**:
    - **Dijkstra's Algorithm**
    - Bellman Ford Algorithm