**Answers**

**1.Types of Linked Lists**

1. **Singly Linked List**: A singly linked list consists of nodes where each node contains a data part and a reference (or pointer) to the next node in the sequence. It allows traversal in one direction (from head to tail).
2. **Doubly Linked List**: A doubly linked list is similar to a singly linked list, but each node contains two references: one to the next node and another to the previous node. This allows for traversal in both directions (forward and backward).

4. **Analysis**

**Time Complexity of Operations**

1. **Add Task**: O(n)
2. **Search Task**: O(n)
3. **Traverse Tasks**: O(n)
4. **Delete Task**: O(n)
5. **Advantages of Linked Lists Over Arrays for Dynamic Data**
6. **Dynamic Size**: Linked lists can grow and shrink in size dynamically, allowing for efficient memory usage without needing to define a fixed size at creation time.
7. **Efficient Insertions/Deletions**: Inserting or deleting a node in a linked list can be done without shifting elements, making these operations O(1) when at the beginning or when the node to be deleted is known.
8. **Memory Utilization**: Linked lists use memory for each element independently, which can be more efficient when dealing with varying sizes of data or frequent additions/removals.