**Part 1: Conceptual Questions**

**Linked Lists:**

**a. Define a linked list and explain its advantages over an array.**

**b. Compare singly linked lists and doubly linked lists. Provide advantages and disadvantages of each.**

**Stacks:**

**a. Explain the Last In First Out (LIFO) property of a stack. Provide an example.**

**b. Describe two common operations performed on a stack and illustrate them with examples.**

**Queues:**

**a. Explain the First In First Out (FIFO) property of a queue. Provide an example.**

**b. Differentiate between a queue and a priority queue. When would you use each?**

**Part 2: Practical Questions**

**Linked Lists:**

**a. Write a function in any programming language to reverse a linked list.**

**b. Implement a method to detect if a linked list has a cycle.**

**Stacks:**

**a. Implement a stack using an array. Include functions for push and pop operations.**

**b. Write a program to check if a given expression with parentheses is balanced using a stack.**

**Queues:**

**a. Implement a circular queue in a programming language of your choice(Python or Js).**

**Part 3: Analysis**

**Analysis:**

**a. Compare the time complexity of inserting an element at the end of a linked list with that of inserting an element at the beginning.**

**b. Discuss the time complexity of the basic operations (enqueue and dequeue) in a queue implemented as an array.**