Q1: Which of the following is NOT a characteristic of a stack data structure?

a) Follows LIFO (Last-In, First-Out) principle

b) Allows access to any element directly

c) Elements are inserted and removed from the same end

d) Can be implemented using arrays or linked lists

Q2: What operation adds an element to the top of a stack?

a) Pop

b) Peek

c) Enqueue

d) Push

Q3: What operation removes an element from the top of a stack?

a) Push

b) Peek

c) Dequeue

d) Pop

Q4: What is the time complexity of the push operation in a stack implemented using an array?

a) O(n)

b) O(log n)

c) O(1)

d) O(n log n)

Q5: What is the time complexity of the pop operation in a stack implemented using a linked list?

a) O(n)

b) O(log n)

c) O(1)

d) O(n log n)

Q6: Which of the following is a common application of stacks?

a) Storing customer data

b) Implementing a queue

c) Evaluating arithmetic expressions (e.g., infix to postfix conversion)

d) Sorting algorithms like merge sort

Q7: What happens when you try to pop an element from an empty stack?

a) It returns None

b) It returns a default value (e.g., 0)

c) It raises an exception (e.g., StackUnderflow)

d) It creates a new element at the top of the stack

Q8: What does the "peek" operation do in a stack?

a) Removes the top element from the stack.

b) Returns the top element without removing it.

c) Adds an element to the top of the stack.

d) Checks if the stack is empty.

Q9: In stack implementation, what is the significance of the "top" variable?

a) It stores the maximum size of the stack.

b) It points to the bottom element of the stack.

c) It points to the next available free space.

d) It points to the topmost element of the stack.

Q10: Which data structure is best suited for implementing undo/redo functionality in a text editor?

a) Queue

b) Stack

c) Linked List

d) Binary Tree

Answer Key

Q1: b

Q2: d

Q3: d

Q4: c

Q5: c

Q6: c

Q7: c

Q8: b

Q9: d

Q10: b