

## Theory Assignment 02

Marks

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1. Between array based stack implementation and linked-list based stack implementation which is better when I need random access in the stack? Explain the reasons. **15**

2. What is the time complexity of push, pop and top operations in a stack? **10**

3. Suppose you need a stack of characters, a stack of integers and a stack of real numbers. How will you implement this scenario using a single stack? **15**

4. What is a postfix expression and why do we need it? How is it evaluated using a stack for the below example? You need to show all the steps. **15**

$abc^*+de^*+$

5. Simulate balanced parentheses check using stack for the below example. You need to show all the steps. **15**

$(([[]\{\}()) ) )$

6. Sort a stack of integers using another stack for the below example. You need to show all the steps. **15**

Stack  $\rightarrow [3,4,6,2,5]$

7. Convert the infix expression to postfix expression using a stack. You need to show all the steps. **15**

$a+b^*c+d^*e$