Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

School of Computer Science and Engineering

Mid - Term Examinations - November 2024

Semester: III | **Date**: 05-11-2024

Course Code: CSE2001 | **Time**: 02.00pm to 03.30pm

Course Name: Data Structures and Algorithms | **Max Marks**: 50

Program: B. Tech in Computer Science & Engineering | **Weightage**: 25%

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. 5Qx2M=10M

1	Define arrays. Mention its types.	2 Marks	L2	CO1
2	Deduce the underlying logic of stack underflow.	2 Marks	L2	CO1
3	Compare a standard queue with a circular queue.	2 Marks	L2	CO1
4	Categorize data structures and provide a few examples.	2 Marks	L2	CO1
5	Explain the concept of an Abstract Data Type (ADT) with an example.	2 Marks	L2	CO1

Part-B

Answer ALL Questions. Each question carries 10 marks. 4QX10M=40M

6	**6a.**	Create a code snippet to insert an element at a specified position in an array.	4 Marks	L3	CO2
	6b.	Use a code snippet to demonstrate the push operation in a stack.	3 Marks	L3	CO2
	6c.	Discuss any two applications of Queue	3 Marks	L2	CO1
		Or			
7	**7a.**	Model the following operations in a stack: Is empty, Is full, Peek, Display.	4 Marks	L3	CO2

	7b.	Apply a code snippet to demonstrate the pop operation in a stack.	3 Marks	L3	CO2
	7c.	Discuss any two applications of Stack	3 Marks	L2	CO1
8	**8a.**	Develop a code snippet to demonstrate the following operations in a queue: Is empty, Is full, Size, Display.	5 Marks	L3	CO2
	8b.	Construct the postfix expression for the following infix expression: ((P – Q) + R / (S * T)) – U.	5 Marks	L3	CO2
		Or			
9	**9a.**	Build a code snippet to demonstrate the enqueue operation in a circular queue.	5Marks	L3	CO2
	9b.	Solve the evaluation of the following postfix expression: 9 8 7 / - 6 +.	5 Marks	L3	CO2
10	**10a.**	Develop a code snippet to insert a new node at the beginning of a linked list.	5 Marks	L3	CO3
	10b.	Build a code snippet to delete the node at the end of a linked list.	5Marks	L3	CO3
		Or			
11	**11a.**	Develop a code snippet to insert a new node at the end of a linked list.	5Marks	L3	CO3
	11b.	Build a code snippet to delete the node at the beginning of a linked list.	5Marks	L3	CO3
12	**12a.**	Explain the logic of the factorial of a number and write the base case for the same.	3 Marks	L2	CO1
	12b.	Develop a code snippet to insert a new node at the beginning of a circular list.	7 Marks	L3	CO3
		Or			
13	**13a.**	Explain the logic of the Fibonacci sequence and write the base case for the same.	3 Marks	L2	CO1
	13b.	Build a code snippet to delete the node at the end of a circular list.	7 Marks	L3	CO3