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**PRESIDENCY UNIVERSITY  
BENGALURU  
SCHOOL OF ENGINEERING**

**MAKE UP EXAMINATION – JAN 2023**

**Course Code:** CSE2001

**Course Name:** Data Structures and Algorithms

**Program** : B.Tech

**Date:** 30-JAN-2023

**Time:** 01:00PM to 04:00PM

**Max Marks:** 100

**Weightage:** 50%

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**Instructions:**

- (i) Read the questions properly and answer accordingly.
  - (ii) Scientific and non-programmable calculators are permitted
  - (iii) Question paper consists of 3 parts.
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**Part A**

**Answer all the Questions. Each Question carries TWO marks. (10Qx2M=20M)**

1. Differentiate linear and non-linear data structure
2. How singly linked lists can be represented?
3. What is an array?
4. Define Graph?
5. Explain Push() operation in Stack.
6. Define circular queue
7. Convert the infix  $(a+b)*(c+d)/f$  into postfix expression
8. What are the different types of traversing in a tree?
9. Define node structure of a Doubly linked list.
10. Explain Enqueue operation in Queue.

**Part B**

**Answer all the Questions. Each Question carries TEN marks. (5Qx10M=50M)**

11. Explain insertion and deletion operations in a singly linked list.
12. Explain Stack ADT and its operations
13. Explain circular queue and its implementation

14. Explain array implementation of queue using Java program.
15. Explain the linked list implementation of BST

### **Part C**

**Answer all the Questions. Each Question carries FIFTEEN marks. (2Qx15M=30M)**

16. The customer needs to pay the groceries bills in the Mart. The customer who stands first in the queue will pay the bill and move out first and who comes later to be added at the Last in the Queue. Perform the below operations using Java program
  - I. Create the Queue for the customer by adding each customer bill number one after the other in a line.
  - II. The customer who comes first pays the bill and leaves the mart. Show the same scenario by deleting the first node from the queue.
  - III. Display the queue content after each operation.
  
17. Amul Sweets supplies various traditional sweets and confectioneries for all occasions and celebrations. Company wants to automate their business. Perform the below operations using suitable Data Structure with a Java program.
  - I. Add sweets (at front)
  - II. Add Savories (at end)
  - III. Display all items.

Variety of Sweets: Mysore pak, kaju roll, Burfi.

Variety of Savories: Potato chips, Kara sev, cashew.