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**Presidency University**

**Bengaluru**

 **SCHOOL OF COMPUTER SCIENCE AND ENGINEERING AND INFORMATION SCIENCE**

**Make-Up Examinations, July 2024**

**Semester**: II

**Course Code**: CSE2001

**Course Name**: Data Structures and Algorithms

**Program:** B.Tech

**Date**: 18/July /2024

**Time**: 9:30 AM – 12:30 PM

**Max Marks** 100

**Weightage**: 50%

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

**Part A [Memory Recall Questions]**

**Answer all the Questions. (5Qx 4M= 20M)**

1. Define stack. Explain its applications (C.O.No.1) [Application]
2. Explain the different operations available in queue data structures (C.O.No.1) [Application]
3. Explain at least one way of implementing queues using stack (C.O.No.1) [Application]
4. Explain different types of linked list data structures (C.O.No.2) [Application]
5. What is a Hash Map in data structure? What is the requirement for an object to be used as a key or value in Hash Map (C.O.No.1) [Application]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. (5Qx10M=50M)**

1. Write a Java program to search an element in a given array using binary search.

(C.O.No.4) [Comprehension]

1. Explain how to find the 3rd node in the given list and also write the method for the same.

(C.O.No.2) [Application]

1. Explain how to find the sum of two linked lists using stack. (C.O.No.2) [Application]
2. Explain briefly the concept of tree traversals. (C.O.No.3) [Application]
3. What is a graph data structure and its representations? What are the applications for graphs? (C.O.No.3) [Application]

**Part C [Problem-Solving Questions]**

**Answer all the Questions. (2Qx15M=30M)**

1. Implement a program using java programing to store the numbers in the fashion where the first element inserted will be deleted at the last. Write the method to insert, delete and display the elements in the stack. (C.O.No.2) [Application]
2. Using appropriate data structures create a java application for the working of mp3 player. It has the options to insert the song, delete the song and display the song. Whichever the song inserted first only that song can be deleted first. (C.O.No.2) [Application]