**SET A**

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PRESIDENCYUNIVERSITY BENGALURU

SCHOOLOFENGINEERING

MAKE UP EXAMINATION-JULY 2024

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| **EvenSemester**:2023-24  **CourseCode**:CSA2005  **Course Name**: Analysis of Algorithms  **Program&Sem**: BCA | **Date**: 12/07/2024  **Time**:9:30–12:30 PM  **MaxMarks**:100  **Weightage**:50% |

# Instructions:

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

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries 5 marks. (4Qx5M=20M)**

1. Define algorithm. What are the criteria that an algorithm must satisfy?
2. Write the control abstraction for divide and conquer technique
3. Explain weighted directed graph with an example
4. Write the difference between backtracking and branch and bound

# Part B[Problem Solving Questions]

**Answer all the Questions. Each question carries 10 marks. (4Qx10M=40M)**

## 5.) Illustrate optimal binary search tree with an example

6.) Sort the given list of numbers using heap sort: 12, 19, 17, 16, 15, 18.

7.) Discuss about the important problem types and fundamental data structures..

8.) Apply quick sort algorithm to sort the list P, R, E, S, I, D, E, N, C, Y in alphabetical order. Draw the tree of recursive calls

# Part C [Problem Solving Questions]

**Answer all the Questions. Each question carries 20 marks. (2Qx20M=40M)**

9.) Design merge sort algorithm. Write a descriptive note on its best case, average case, and worst-case time efficiency.

10.) Explain the general plan for analyzing the efficiency of a recursive algorithm. Write the algorithm to find a factorial of a given number. Derive its efficiency.