

14NN801

Roll No. _____

Total No. of Pages.: 02

14NN801

MCA I Semester (New Scheme) Main/Back Exam August-2023

MCA 121 - Data Structures using C++

Time : 3 Hours

Maximum Marks: 80

Min. Passing Marks: 26

Instructions to Candidates:

- Student has to attempt all 10 very short answer type questions (2 marks each).
- Student has to attempt all 5 short answer types questions (4 marks each).
- Student has to attempt all 5 questions (8 marks each).

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1 _____

2 _____

PART A

Q.1 Attempt all 10 very short answer type questions (2 marks each)

[2 x 10 = 20]

- What is this pointer?
- Name the operator that cannot be overloaded.
- What are sparse matrices?
- What are manipulators of C++?
- Write some applications of stacks.
- What is an abstract data type?
- What are different ways of traversing a tree?
- Define B+ trees.
- What is adjacency matrix?
- What is a spanning tree?

P.T.O.

PART B

Q.2 Attempt all 5 short answer type questions (4 marks each) [4 x 5 = 20]

- (a) Write a program to demonstrate single level inheritance in C++.
- (b) Write an algorithm that inserts an element ELEMENT into Kth position of linear array A.
- (c) Discuss various operations that can be performed on queues.
- (d) What are threaded binary trees?
- (e) Illustrate the concept of breadth first search traversing of graph?

PART C

Q.3. Attempt all 5 questions (8 marks each) [8 x 5 = 40]

- (a) What do you mean by non-linear data structure? Under what conditions we prefer non-linear data structure over linear data structure?
- (b) How are linked lists stored in memory?
- (c) What is depth first search? Write down its algorithm.
- (d) What are leaps and their advantages?
- (e) Explain virtual function in C++ with example.

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