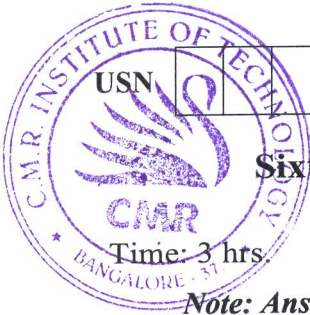


CBCS SCHEME

18EC643



Sixth Semester B.E. Degree Examination, June/July 2023

Data Structures Using C++

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain operator overloading with C++ program. (08 Marks)
- b. Write a C++ program to illustrate use of constructor and destructor. (08 Marks)
- c. Explain different types of operation in C++. Give examples for each. (04 Marks)

OR

- 2 a. Explain with C++ program concept of polymorphism. (08 Marks)
- b. Define Recursion. Write a recursive function in C++ to find factorial of a number. (08 Marks)
- c. What is Inheritance? Compare multiple and multilevel inheritance. List the advantages and disadvantages. (04 Marks)

Module-2

- 3 a. What is Sparse Matrix? Write a C++ program for Sparse Matrix representation using array. (10 Marks)
- b. Write a C++ program to multiply 2 matrixes. (10 Marks)

OR

- 4 a. What is singly linked list? Explain the operation in singly linked list with a C++ program. (10 Marks)
- b. Explain with C++ program how dynamic memory allocation is performed. (10 Marks)

Module-3

- 5 a. Explain stack abstract data type in detail. (10 Marks)
- b. Write and explain C++ program that inputs a string and output the pair of matched paranthesis as well as those paranthesis for which there is no match. (10 Marks)

OR

- 6 a. Describe towers of Hanoi problem and give solution for the same. (10 Marks)
- b. Write a C++ program to implement a stack using singly linked list. (10 Marks)

Module-4

- 7 a. Write a method for Push and Pop for linked Queue. (08 Marks)
- b. Discuss the problem description and solution strategy for Rail Road car rearrangement. (08 Marks)
- c. Explain array representation of Queues. (04 Marks)

OR

- 8 a. Write a C# program to explain and implement image components labeling with example. (08 Marks)
- b. Discuss the implementation of priority queues in C++. (08 Marks)
- c. What is dictionary? Explain various operations on dictionaries. (04 Marks)

Module-5

- 9 a. What is Binary tree? Explain the properties of binary trees? How do you represent binary trees? Explain in detail. (10 Marks)
- b. Write a C++ program for linked implementation of complete binary tree. (10 Marks)
- OR
- 10 a. Explain Binary search tree implementation and operations with suitable examples. (10 Marks)
- b. Write a C++ program to sort an array of 10 elements using Heap sort algorithm
20, 7, 1, 54, 10, 15, 90, 23, 77, 25 (10 Marks)
