CBCS SCHEME

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18EC643

Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025
Data Structure using C++

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain with example pillars of C++ programming. **(10 Marks)**

b. Explain the complete structure of C++ programming and write a C++ program to swap 2 numbers. **(10 Marks)**

OR

2 a. Explain the concept of constructor and destructor with simple example. **(10 Marks)**

b. Explain recursion with simple example. **(05 Marks)**

c. Explain briefly the concept of polymorphism. **(05 Marks)**

Module-2

3 a. Define array. Also explain the concept of row-major and column – major mapping array. **(08 Marks)**

b. Explain dynamic memory allocation with example. **(06 Marks)**

c. With a C++ program to add 2 matrices. **(06 Marks)**

OR

4 a. Explain with example of abstract data type linear list and abstract class linear list. **(10 Marks)**

b. Explain with diagram singly linked lists and chains. **(10 Marks)**

Module-3

5 a. Explain stack and its applications. **(04 Marks)**

b. Briefly explain array representation of stack with example. **(08 Marks)**

c. Explain linked representation of stack. **(08 Marks)**

OR

6 a. Define problem description of tower of Hanoi and write a program to explain the concept of tower of Hanoi using stack. **(10 Marks)**

b. Write a C++ code to convert infix expression to postfix expression. **(10 Marks)**

Module-4

7 a. Explain ADT specification of queue. **(06 Marks)**

b. Write C++ program for hash table to perform search and insert operation. **(10 Marks)**

c. Write a note on class ArrayQueue. **(04 Marks)**

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OR

8 a. Define dictionary. Explain operation to be performed on dictionaries. **(07 Marks)**

b. Write a note on linear list representation of dictionaries. **(05 Marks)**

c. Briefly explain different collision revaluation technique in hashing. **(08 Marks)**

Module-5

9 a. Explain all properties of binary tree and array representation of binary tree. **(07 Marks)**

b. Write a C++ program to search a binary search tree. **(08 Marks)**

c. Write a note on binary tree traversal operation. **(05 Marks)**

OR

10 a. Explain with operation of ADT binary tree. **(07 Marks)**

b. Write a C++ program to determine height of binary tree. **(06 Marks)**

c. Describe heap technique and explain heap sorting with relevant diagram. **(07 Marks)**

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