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Roll No 0810CA22DD14

MCADD-501

M.C.A. (Integrated), V Semester

Examination, December 2024

Object Oriented Programming in C++

Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What is Object-Oriented Programming (OOP)? List and explain its four basic principles.
b) Explain the concept of a class and an object in C++. Write a basic class Car with private attributes such as model, year, and price.
2. a) What is the difference between public, private, and protected access specifiers in C++? Provide an example.
b) What is a constructor in C++? Explain the different types of constructors with examples.
3. a) What is the role of the destructor in a C++ class? How is it different from a constructor?
b) What is inheritance in C++? Explain the difference between single inheritance, multiple inheritance, and multilevel inheritance with examples.

4. a) What is the purpose of the virtual keyword in C++? How does it affect inheritance?
b) What is dynamic binding in C++? How does it work with virtual functions?
5. a) What is polymorphism in OOP? Explain the difference between compile-time polymorphism and runtime polymorphism.
b) What is the purpose of the pure virtual function? Provide an example of a class with a pure virtual function in C++.
6. a) What is an abstract class? Give an example of how to declare and use an abstract class in C++.
b) Explain the concept of friend function in C++. Provide an example of how a friend function can access private data members of a class.
7. a) Design a class Bank Account in C++ with private attributes account number, balance, and account Holder. Implement methods to deposit and withdraw money and display the account details.
b) Discuss all UML diagrams in brief.
8. Explain the working of any two of the following machine learning algorithms in detail.
 - i) Operator Overloading
 - ii) Views in UML
 - iii) 'this' pointer in C++
