Class: B.Com IT – II **C++ Programming**

Unit I: Basic Concepts of C++ and OOP

Short Answer

1. What is Object-Oriented Programming (OOP)? Discuss its basic concepts.
2. List the benefits and features of Object-Oriented Programming (OOP).
3. Explain the structure of a basic C++ program.
4. What are data types in C++? Explain with examples.
5. Define keywords and operators in C++. Discuss their role with examples.
6. What is the `this` pointer in C++? How does it work?
7. Discuss the control structures in C++ with examples, including conditional and looping statements.
8. Explain class declaration in C++. What are its components?
9. What is a constructor in C++? Describe its declaration and definition with an example.
10. What is a destructor in C++? Explain its purpose and provide an example.
11. Describe how to declare and define a function inside a class and outside a class using the scope resolution operator.
12. What are inline functions in C++? How are they defined and called?
13. Explain the concept of a friend function in C++ and provide an example of its usage.

Long Answer

1. Explain the basic concepts of Object-Oriented Programming (OOP) and discuss its advantages in modern software development.
2. Write and explain the structure of a basic C++ program. Discuss each part of the program (e.g., header files, main function).
3. Explain different data types in C++ with examples, including primitive and derived data types.
4. Discuss the importance of keywords and operators in C++ with examples of each.
5. What is the `this` pointer in C++? How is it used within a class? Provide an example.
6. Explain control structures in C++ in detail. Discuss how conditional and looping statements work in C++ with suitable examples.
7. Explain the concept of constructors and destructors in C++. Provide examples of both, demonstrating their use.
8. Discuss how function declarations and definitions can be written inside and outside the class using the scope resolution operator in C++.
9. Explain inline functions in C++ with their advantages and disadvantages. Provide a simple example.
10. Discuss the concept of a friend function in C++ with an example where a friend function is used to access private members of a class.

Unit II: Inheritance and Polymorphism

Short Answer

1. What is inheritance in C++? Describe the role of the base class and derived class.
2. Explain the different types of inheritance in C++. Provide examples for each type.
3. What is polymorphism? Explain the two types of polymorphism in C++.
4. What is function overloading in C++? Provide an example.
5. Explain function overriding in C++ with an example.
6. What is the purpose of virtual functions in C++? Provide an example of their use.
7. Explain the concept of a pure virtual function in C++ with an example.

Long Answer

1. Explain the concept of inheritance in C++. Discuss the role of base and derived classes with suitable examples.
2. Discuss the types of inheritance in C++: Single Inheritance, Multiple Inheritance, Hierarchical Inheritance, Multilevel Inheritance, and Hybrid Inheritance. Provide examples for each.
3. Explain polymorphism in C++. Discuss static polymorphism and dynamic polymorphism with examples.
4. Write a C++ program to demonstrate function overloading. Explain the concept in detail.
5. Explain function overriding in C++ with examples. Discuss the differences between overloading and overriding.
6. Discuss virtual functions in C++ with examples. How do they enable dynamic polymorphism in C++?
7. What is a pure virtual function in C++? Discuss its role in abstract classes and provide an example.