Object-Oriented Programming in C++

1. What is Object-Oriented Programming (OOP)?

    - A) Programming with loops
    - B) Organizing code around objects with data and behavior
    - C) Writing procedural code
    - D) Managing hardware

2. Which of the following is a key principle of OOP?

    - A) Compilation
    - B) Encapsulation
    - C) Optimization
    - D) Iteration

3. What is a class in C++?

    - A) A function
    - B) A blueprint for objects
    - C) A variable
    - D) A loop

4. How do you declare a class in C++?

    - A) struct ClassName {}
    - B) class ClassName {}
    - C) object ClassName {}
    - D) function ClassName {}

5. What is an object in C++?

    - A) A member function
    - B) An instance of a class
    - C) A data type
    - D) A pointer

6. What does encapsulation do?

    - A) Exposes all data publicly
    - B) Bundles data and methods, restricting access
    - C) Simplifies code execution
    - D) Enables multiple inheritance

7. How is data abstraction achieved in C++?

    - A) Using private data members
    - B) Hiding implementation details with simple interfaces
    - C) Overloading functions
    - D) Inheriting classes

8. What is a friend function in C++?

    - A) A member function

- B) A non-member function with access to private members
- C) A constructor
- D) A virtual function

9. Which keyword declares a friend function?

- A) friend
- B) public
- C) private
- D) virtual

10. What is polymorphism in C++?

- A) Using multiple constructors
- B) Allowing objects to have different behaviors with a common interface
- C) Hiding data
- D) Allocating memory

11. Which type of polymorphism uses virtual functions?

- A) Compile-time
- B) Run-time
- C) Static
- D) Overloaded

12. What is function overloading?

- A) Defining multiple functions with the same name but different parameters
- B) Inheriting functions
- C) Hiding functions
- D) Calling functions recursively

13. What does operator overloading allow?

- A) Creating new operators
- B) Redefining operators for user-defined types
- C) Hiding operators
- D) Deleting operators

14. What is a constructor in C++?

- A) A function to delete objects
- B) A function called when an object is created
- C) A function to access private data
- D) A virtual function

15. What is true about a destructor?

- A) It has parameters
- B) It is called when an object is destroyed
- C) It returns a value
- D) It is named differently from the class

16. Which constructor is called with no arguments?

- A) Parameterized

- B) Copy
- C) Default
- D) Virtual

17. What is inheritance in C++?

- A) Creating multiple objects
- B) Allowing a class to inherit properties from another
- C) Overloading functions
- D) Hiding data

18. Which access specifier allows public members of the base class to remain public in the derived class?

- A) private
- B) protected
- C) public
- D) friend

19. What is the output of this code? `class A { public: void show() { std::cout << "A"; } }; class B : public A { public: void show() { std::cout << "B"; } }; int main() { B b; b.show(); }`

- A) A
- B) B
- C) Error
- D) A B

20. What keyword is used to make a function polymorphic at runtime?

- A) friend
- B) virtual
- C) public
- D) override

21. Which of the following is true about a destructor?

- A) It can be overloaded
- B) It has no parameters
- C) It is called manually
- D) It returns a value

22. What is the purpose of a copy constructor?

- A) Initialize an object with default values
- B) Initialize an object as a copy of another
- C) Delete an object
- D) Override a method