# Government College Women University Faisalabad

## Course Title: Object Oriented Programming (OOP)

Roll No. : 24145

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Class : ADP CS 2nd MA

Quiz No. : 3

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**Dynamic Memory Management & Operators**

1. The delete operator is used to:
   a) Free memory allocated by new
   b) Delete a file
   c) Terminate a program
   d) Remove a variable

2. What happens if you use delete on an object allocated with new[]?
   a) Works fine
   b) Undefined behavior
   c) Compiler error
   d) Memory leak

3. Object slicing occurs when:
   a) A derived class object is assigned to a base class object
   b) A base class pointer points to a derived class
   c) A virtual function is overridden
   d) An abstract class is instantiated

4. The correct syntax to delete an array of objects is:
   a) delete objectName;
   b) delete[] objectName;
   c) delete *objectName;
   d) objectName.delete();

5. A copy constructor is called when:
   a) Assigning one object to another
   b) Passing an object by value to a function
   c) Returning an object by value
   d) Both b and c

6. The assignment operator (=) is used to:
   a) Initialize an object during declaration
   b) Copy values between existing objects
   c) Allocate memory
   d) Compare two objects

7. A virtual destructor is necessary when:
   a) A class has no destructor
   b) A class is derived from a polymorphic base class

c) A class uses dynamic memory
d) A class is abstract

8. Which operator cannot be overloaded?
a) =
b) ::
c) +
d) <<

9. The this pointer refers to:
a) The current object
b) A static member
c) A base class
d) A global variable

10. Dynamic memory allocation in C++ uses:
a) malloc() and free()
b) new and delete
c) alloc() and dealloc()
d) create() and destroy()

**Templates & STL**

11. A template class is used to:
a) Create generic data structures
b) Limit code reusability
c) Replace inheritance
d) Hide implementation details

12. The correct syntax for a function template is:
a) template <class T> T func(T a) { ... }
b) template <typename T> T func(T a) { ... }
c) Both a and b
d) template T func(T a) { ... }

13. The STL component used to traverse containers is:
a) Iterator
b) Algorithm
c) Vector
d) Hash

14. Which header is required for std::string?
    a) <string>
    b) <iostream>
    c) <cstring>
    d) <vector>

15. A std::vector is:
    a) A fixed-size array
    b) A dynamic array
    c) A linked list
    d) A stack

16. The std::map container uses:
    a) Arrays
    b) Linked lists
    c) Hash tables
    d) Binary trees

17. What does std::cout represent?
    a) Standard input
    b) Standard output
    c) Standard error
    d) File stream

18. Namespaces are used to:
    a) Avoid naming conflicts
    b) Allocate memory
    c) Create templates
    d) Inherit classes

19. The using namespace std; directive:
    a) Imports all names from the std namespace
    b) Declares a new namespace
    c) Hides global variables
    d) Causes memory leaks

20. Which is **not** an STL container?
    a) std::list
    b) std::queue
    c) std::array
    d) std::algorithm

**OOP Design & Advanced Topics**

21. Encapsulation refers to:
    a) Hiding data and exposing methods
    b) Inheriting from multiple classes
    c) Overloading operators
    d) Using templates

22. Polymorphism allows:
    a) A single interface for multiple forms
    b) Dynamic memory allocation
    c) Function overloading
    d) All of the above

23. A pure virtual function makes a class:
    a) Abstract
    b) Static
    c) Final
    d) Immutable

24. The role of a destructor is to:
    a) Free resources
    b) Initialize objects
    c) Copy values
    d) Overload operators

25. In OOP, inheritance promotes:
    a) Code reusability
    b) Memory efficiency
    c) Faster execution
    d) Smaller binaries

26. The virtual keyword is used for:
    a) Runtime polymorphism
    b) Compile-time binding
    c) Template specialization
    d) Namespace aliasing

27. A class with at least one pure virtual function is:
    a) Abstract
    b) Concrete

c) Static
d) Final

28. The override keyword ensures:
a) A function overrides a base class method
b) A function is immutable
c) A function is virtual
d) A function is static

29. Design patterns are used to:
a) Solve common design problems
b) Allocate memory
c) Optimize code
d) Replace inheritance

30. The SOLID principles in OOP focus on:
a) Maintainable and scalable design
b) Memory management
c) Template programming
d) Exception handling

**Answer Key**

1. a) Free memory allocated by new
2. b) Undefined behavior
3. a) A derived class object is assigned to a base class object
4. b) delete[] objectName;
5. d) Both b and c
6. b) Copy values between existing objects
7. b) A class is derived from a polymorphic base class
8. b) ::
9. a) The current object
10. b) new and delete
11. a) Create generic data structures
12. c) Both a and b
13. a) Iterator
14. a) <string>
15. b) A dynamic array
16. c) Hash tables
17. b) Standard output
18. a) Avoid naming conflicts
19. a) Imports all names from the std namespace
20. d) std::algorithm
21. a) Hiding data and exposing methods
22. a) A single interface for multiple forms
23. a) Abstract
24. a) Free resources
25. a) Code reusability

26. a) Runtime polymorphism

27. a) Abstract

28. a) A function overrides a base class method

29. a) Solve common design problems

30. a) Maintainable and scalable design