

4. A copy constructor is called when
  - (a) an object is created and simultaneously equated to another existing object.
  - (b) a reference is created to an existing object.
  - (c) an object is passed to a function whose formal argument is an object.
  - (d) an object is passed to a function whose formal argument is a reference.
5. Which of the following is/are used for outputting in text mode?
  - (a) write() function
  - (b) insertion operator
  - (c) put() function
  - (d) extraction operator

### Short Answer Questions

[4 × 5 = 20]

1. Write an inline function and a macro to return the larger of two numbers. Which is better and why?
2. Explain the need for user-defined destructors with the help of examples.
3. What are the ambiguities that arise in multiple and diamond-shaped inheritance. How can they be removed?
4. Explain why read operation on a file should take place in the same mode in which the write operation has occurred?
5. How is a function template overridden for a specific data type?

## Test 2

**Time:** 1 hour  
**Max Marks:** 50

### True/False

[1 × 10 = 10]

1. Two functions with same names and signatures can exist together if their return types are different.
2. A function that returns a non-reference value can be placed on the left of the assignment operator.
3. Only one copy of the static data member exists for a class.
4. Class members are private by default.
5. A class can have more than one destructor.
6. A base class pointer can point at an object of the derived class.
7. All functions of a class must be declared as pure virtual functions in order to make it an abstract base class.
8. The `const_cast` operator is used to convert a pointer of base class type to a pointer of derived class type.
9. Only one function definition is generated from a single function template.
10. An unhandled exception will cause the program to terminate.

### Fill in the Blanks

[1 × 10 = 10]

1. \_\_\_\_\_ is a feature of the Object-Oriented Programming System that allows one function to have more than one definition.
2. The \_\_\_\_\_ operator is used to define a member function outside its class.
3. The non-member function that has special rights to access private members of objects of a class is known as a \_\_\_\_\_ function.
4. The formal argument of the \_\_\_\_\_ constructor must always be a reference object.
5. Inheritance implements a/an \_\_\_\_\_ relationship.

6. If a derived class is derived from a base class by using the protected keyword, the public members of the base class become \_\_\_\_\_ with respect to member functions of the derived class.
7. Apart from the non-static data member, objects of a class that has at least one virtual function contain \_\_\_\_\_.
8. Input pointer can be manipulated by using the \_\_\_\_\_ function.
9. \_\_\_\_\_ is the base class of all classes in the stream handling library of C++.
10. The \_\_\_\_\_ header file must be included for using the 'pair' class.

### Multiple Choice Questions

(more than one choice can be correct)

[2 × 5 = 10]

1. Consider the following function

```
int abc(int, int) {}
```

Which of the following overload the function?

- (a) `int abc(int, int, int) {}`
  - (b) `float abc(int, int) {}`
  - (c) `int abc(float, int) {}`
  - (d) `int abc(int, int=0) {}`
2. Which of the following is/are true about constructors?
    - (a) Its name is prefixed with the tilde sign.
    - (b) It can be overloaded.
    - (c) It can access static data members of a class.
    - (d) It can be virtual.
  3. Which of the following kinds of functions can access the protected members of a class?
    - (a) A global non-member friend function.
    - (b) A member function of a friend class.
    - (c) A global non-member function.
    - (d) A member function of a friend class that has been derived by `public` or `protected` keywords.
  4. Which of the following are classes in the standard C++ stream handling library?
    - (a) `iostream`
    - (b) `stream`

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- (c) ostream
  - (d) fstream
5. Which of the following enable code reusability?
- (a) Function overloading
  - (b) Inheritance
  - (c) Exception handling
  - (d) Templates

**Short Answer Questions**

**[4 × 5 = 20]**

1. Explain the need for user-defined copy constructors with the help of examples.
2. In which order are the constructors and destructors called when an object of the derived class is created?
3. What is the difference between `static_cast` and `dynamic_cast` operators?
4. Why are operators overloaded?
5. When and how does the C++ compiler generate an actual class definition from its template?

**Test 3**

**Time:** 1 hour  
**Max Marks:** 50

**True/False****[1 × 10 = 10]**

1. The value of a mutable data member can be modified by a constant function.
2. Default value cannot be given to more than one formal argument of a function.
3. A static data member of a class can be of the same type as the class.
4. A class can have more than one constructor.
5. A base class and a derived class cannot have functions with the same name and same signature.
6. Presence of virtual functions in a class does not increase the size of its objects.
7. We can overload the increment operator to decrement the value of the objects.
8. The name of the class of the object at which a pointer points can be found out by using the typeid operator.
9. A template class can have only one template type object.
10. A single catch block can be used to catch more than one type of exception.

**Fill in the Blanks****[1 × 10 = 10]**

1. A class that contains another class is known as \_\_\_\_\_ class.
2. The \_\_\_\_\_ pointer points at the invoking object.
3. The \_\_\_\_\_ operator is used to capture memory dynamically in C++.
4. The name of the destructor is prefixed with the \_\_\_\_\_ sign.
5. Deriving from more than one base class is known as \_\_\_\_\_ inheritance.
6. The \_\_\_\_\_ keyword is used to overload operators.
7. The two modes of input/output are \_\_\_\_\_ mode and binary mode.
8. The read() and write() functions operate in \_\_\_\_\_ mode.

9. The \_\_\_\_\_ operator is used to cast away the constness of the operand.
10. The \_\_\_\_\_ keyword is used to label the block of code from which an exception is likely to be thrown.

### Multiple Choice Questions

(more than one choice can be correct)

[2 × 5 = 10]

1. Which of the following keywords is used to create a new data type?
  - (a) class
  - (b) inline
  - (c) throw
  - (d) struct
2. Which of the following occur when a class is derived from another class by using the `private` keyword?
  - (a) Public members of the base class reappear as private members of the derived class.
  - (b) Public members of the base class reappear as protected members of the derived class.
  - (c) Protected members of the base class reappear as protected members of the derived class.
  - (d) Protected members of the base class reappear as private members of the derived class.
3. Which of the following are not keywords in C++?
  - (a) struct
  - (b) abstract
  - (c) constant
  - (d) cast
4. Which of the following functions returns the number of elements in a list?
  - (a) `size()`
  - (b) `length()`
  - (c) `width()`
  - (d) `index()`
5. Flags that indicate state of the next byte in the associated file are
  - (a) `eofbit`
  - (b) `nofilebit`
  - (c) `failbit`
  - (d) `badbit`