



ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE - 2007
OBJECT ORIENTED PROGRAMMING WITH C++
SEMESTER - 2

Time : 3 Hours]

[Full Marks : 70

Group - A**(Multiple Choice Type Questions)**

1. Choose the correct alternatives for *all* of the following : 10 × 1 = 10
- i) A feature that allows one interface to be used for a general class of actions, is called
- a) Polymorphism b) Inheritance
c) Virtual function d) None of these.
- ii) A class is a / an for an object.
- a) object b) instance
c) template d) none of these.
- iii) For overloaded function, the compiler chooses the right specific version on the basis of the parameter is
- a) Type b) Order
c) Number d) All of these.
- iv) A member that can be accessed before any object of its class created is called
- a) Static member b) Static method
c) Instance Variable d) None of these.
- v) A friend function can be called
- a) by using object of the class b) directly
c) should not be called d) like a standard function.
- vi) The argument of a copy constructor is passed by
- a) Value b) Reference
c) Pointer d) Both (a) and (c).



- vii) Which of the following operators may be overloaded ?
- | | | |
|------------------|----------------------------|--------------------------|
| a) · (Member) | b) :: (Scope resolution) | |
| c) % (Modulus) | d) ? : (Conditional). | <input type="checkbox"/> |
- viii) The built in >> returns is
- | | |
|---|--------------------------|
| a) void | |
| b) the same type as the data passed to it | |
| c) a reference to the ostream | |
| d) a copy of the ostream. | <input type="checkbox"/> |
- ix) In protected derivation, accessibility of base members undergoes the following changes in the derived class
- | | | |
|------------------------------|------------------------------|--------------------------|
| a) public becomes protected | b) public becomes private | |
| c) protected becomes private | d) private is not inherited. | <input type="checkbox"/> |
- x) A template provides a convenient way to make a family of
- | | | |
|--------------|--------------|--------------------------|
| a) variables | b) functions | |
| c) classes | d) programs. | <input type="checkbox"/> |

Group - B

(Short Answer Type Questions)

Answer any three questions.

3 × 5 = 15

2. a) Why should the formal argument of a copy constructor be a reference object ?
- b) What are destructors ? When are they called ? What is their utility ? 2 + 1 + 1 + 1
3. a) What is 'this' ?
- b) Write a template function that returns the average of all the elements of an array. The arguments to the function should be the array name and the size of the array. In main(), exercise the function with arrays of type int, double and char. 1 + 4



4. a) What is manipulator in C++ ?
b) Distinguish between static casting and dynamic casting ?
c) What is default constructor ? 2 + 2 + 1
5. a) Distinguish between virtual function and pure virtual function ? Justify your answer with example.
b) A static member function is similar to a friend function. Comment. 2 + 3
6. a) What is the difference between a function template and template function ?
b) How can templates increase the code reuse ? 2 + 3

Group - C

(Long Answer Type Questions)

Answer any *three* questions.

3 × 15 = 45

7. Write a program in C++ to implement a class called "String" for string manipulation. Overload +=, + and = operator, for string append, concatenation and assignment respectively.
8. a) What is dynamic binding ? When do we use it ? Describe with example.
b) What is 'has-a' relationship ? How is this implemented ?
c) Distinguish between inline function and macro.
d) Write a class to represent a vector (a series of float values). Include member functions to perform the following tasks :
- i) To create the vector
 - ii) To modify the value of a given element
 - iii) To multiply by a scalar value
 - iv) To display the vector in the form (19, 20, 30,)
 - v) To add two vector objects.

Write a program to test your class.

(2 + 2 + 2) + (2 + 2) + 5

12

2
1



3 x 5

9. Write short notes on any three of the following :

- a) STL
- b) Inheritance
- c) Operator overloading
- d) Polymorphism
- e) Namespace.

10. a) What are the uses of mutable and explicit keywords ?

b) What is the use of virtual destructor ? Can a constructor be virtual ? Justify your answer.

c) What is an exception ? How is an exception handled in C++ ? Describe with an example.

d) Write a function for the class String that will return the character from the position that is passed as a parameter to it. If the position is out of bounds, the function should throw a user defined exception. $3 + (2 + 2) + (1 + 3) + 4$

11. What do you mean by template ? Distinguish between function template and class template. What is exception ? Provide suitable example. $4 + 4 + 4 + 3$

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