

CS/MCA/Even/2nd Sem/MCA-205/2014

2014

Object Oriented Programming with C++

Time Allotted : 3 Hours

Full Marks : 70

The figure in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable

Group-A

(Multiple Choice Questions)

1. Choose the correct alternative for the following: 10x1=10
 - i. Which of the following is not a feature of OOPS?
 - a) Encapsulation
 - b) Inheritance
 - c) Static binding
 - d) Polymorphism
 - ii. How many times a static member variable is initialized?
 - a) 0
 - b) 1
 - c) Depends on the number of objects created
 - d) None of these
 - iii. Consider a class called matrix with object mat and the declaration: `const matrix mat(x,y)`; Which of the following statements is false about this statement.
 - a) The values of x and y can be modified.
 - b) The object mat can call only non-const member functions
 - c) Both (a) and (b)
 - d) None of the above
 - iv. When a base class is inherited by a derived class as protected, the private members of the base class become

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[Turn over]

- a) private member of the derived class
 - b) protected member of the derived class
 - c) public member of the derived class
 - d) they cannot be inherited
- v. A friend function can access
- a) only the private members
 - b) only the public members of a class
 - c) both private and public members of a class
 - d) None of these
- vi. The order of execution of base class constructors for the class declaration class C:public B, virtual public A is
- a) derive, base, virtual base
 - b) base, derive, virtual base
 - c) virtual base, base, derive
 - d) virtual base, derive, base
- vii. Which operator cannot be overloaded in C++?
- a) .
 - b) ::
 - c) Both a and b
 - d) None of these
- viii. Default visibility mode of a class is
- a) Public
 - b) Private
 - c) Protected
 - d) All
- ix. "this" pointer points to the object that is
- a) declared
 - b) destroyed
 - c) currently unused
 - d) currently used
- x. If a class contains at least one pure virtual function then the class is called
- a) virtual base class
 - b) abstract base class
 - c) both (a) and (b)
 - d) None of these

Group-B

(Short Answer Questions)

Answer any *three* of the following. 3x5=15

2. How inline functions are executed? What are the differences between inline function and preprocessor macro? 3+2

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3. Write a program to overload >> and << operators to read and display a vector. 5
4. In what order are the class constructors and the destructors executed, when a derived Class object is created? Explain with example. 5
5. (a) What do you mean by reference variable?
(b) What is copy constructor? Where is it used? 2+(2+1)
6. (a) What is manipulator in C++? Give one example describing the utility of the manipulator?
(b) What is default Constructor? (2+2)+1

Group-C

(Long Answer Type Questions)

Answer any *three* questions 3x15= 45

7. a) Define a class in C++ with following description:
Private Members
 - A data member Flight number of type integer
 - A data member Destination of type string
 - A data member Distance of type float
 - A data member Fuel of type float
 - A member function CALFUEL() to calculate the value of Fuel as per the following criteria:

Distance	Fuel
<=1000	500
more than 1000 and <=2000	1100
More than 2000	2200
- Public Members
 - “A function FEEDINFO() to allow user to enter values for Flight Number, Destination, Distance & call function CALFUEL() to calculate the quantity of Fuel
 - “A function SHOWINFO() to allow user to view the content of all the data members.
- b) Create a class called DATE and overload ++ operator to find the next date. (5+10)

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8. a) What are Templates? Distinguish overloaded functions and function templates.
b) Write a function template for finding the minimum value contained in an array.
c) Distinguish between the terms class template and template class. (5+7+3)
9. Write a complete C++ program to do the following:
(i) 'Student' is a base class, having two data members: entryno and name;
(ii) entryno is integer and name of 20 characters long. The value of entryno is 1 for Science student and 2 for Arts student. otherwise It is an error.
(iii) 'Science' and 'Arts' are two derived classes, having respectively data items marks for Physics, Chemistry, Mathematics and marks for English, History, Economics.
(iv) Read appropriate data from the screen for 3 science and 2 arts students.
(v) Display entryno, name, marks for science students first and then for arts students. (15)
10. a) What is containership? How does it differ from inheritance?
b) How do the properties of following two derived classes differ?
(i) class X: public A{...} (ii) class Y : private A{...}
c) How can you pass parameters to the constructors of base classes in multiple inheritance? Explain with suitable example. (4+5+6)
11. a) Write a program to open a file in C++ "Hello.dat" and write
"This is only a test"
"Nothing can go wrong"
"All things are fine ..."
into the file. Read the file and display the contents.
b) Write a program to overload the operator '+' for complex numbers. (6+9)