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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

January 2017 Semester End Make Up Examinations

Course: **Programming With C++** Duration: **3 hrs**
Course Code: **16CI3GCPCP** Max Marks: **100**
Date: 13.01.2017

Instructions: **1. Answer any five full questions choosing one from each unit.**
2. Assume missing data (if any) suitably.

UNIT 1

1. a) A Book shop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. Whenever a customer wants a book, the sales person inputs the title and author, the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then system displays the book details and requests for the number of copies required. If the requested copies are available, the total cost of the requested copies is displayed; otherwise the message "Required copies not in stock "is displayed. Design a system using a class called books with suitable member functions and constructors. **10**

   b) A nonmember function can accesses private variables of a class? Justify your answer with an example program. **05**

   c) Design a class complex with following data members: real and imaginary with accessor and mutator methods, appropriate constructors to initialize the values. Also write a method to add two objects of complex class by passing object to the function and return the resultant object. Write a main function to test the methods in the above class. **05**

UNIT 2

2. a) Develop a function power ( ) to calculate m to the power of n, use a default value of 2 for 'n' when argument is omitted. Write a main method that gets the values of 'm' and 'n' from the user to test the function. **06**

   b) Develop a program to overload pre increment and post increment operators on class Distance with members feet and inches. **08**

   c) Develop a program to find the volume of cube, cylinder and cone by overloading volume function. **06**

UNIT 3

3. a) Explain with an example, the order of invocation of constructors and destructors and also passing arguments to base class constructors in multilevel inheritance. **10**

b) Consider a system for declaring the examination result. Design three classes: student, Exam, and Result. The Student class has data members: roll number, name. Create the class Exam by inheriting Student class. The exam class adds fields representing the marks scored in 3 subjects. Derive the Result from the Exam class and it has its own fields such as total marks. Write an interactive program to model this relationship. **10**

OR

4. a) Late binding can be preferred over early binding? Justify, also explain Virtual functions **05**

b) i) Identify the error in the following program **05**

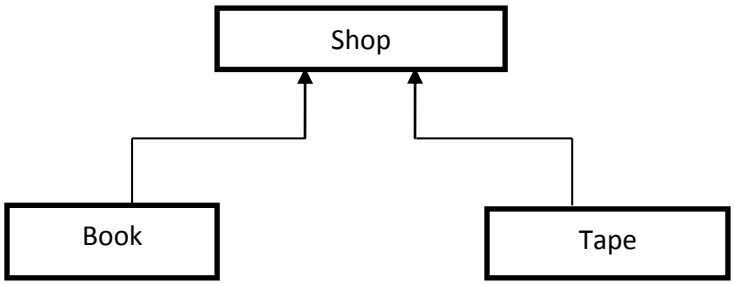
```
#include<iostream.h>
class A
{
   int i;
};

class AB:virtual A
{
  int j;
};
class AC:A,ABAC
{
  int k;
};
class ABAC :AB,AC
{
   int l;
};
void main()
{
  ABAC abac;
 cout<<"size of
ABAC:"<<sizeof(abac);
}
```

ii) What will the output of the following code.

```
#include<iostream>
Using namespace std;
Class BC
{
  Public:
 Void show(void){cout<<"\n Iam in
base class….");}
};
Class DC:public BC
{
  Public :
    Show(void){cout<<"\n I am in
derived class…");}
};
Void main()
{
 BC *ptr;
DC  dobj;
Ptr =&dobj;
Ptr->show();
}
```

What changes should be made a) to trigger the show() method of derived class b) to trigger the show() method of base class.

c) Identify the type of inheritance and develop a program to model the relationship given below assuming its attributes and methods to represent a book shop, selling books and video tapes using virtual functions. **10**



UNIT 4

5. a) Explain generic functions. Write a C++ program to swap three different data types using a generic data types. **10**

   b) Explain exceptions with a general syntax of a exception handling mechanism. **05**

   c) Analyze the below given codes for errors and rectify the same **05**

i)

```
#include<iostream.h>
Using namespace std;
class B{
 };
class D:public B{
};
int main()
{
  D derived;
try{
      throw derived;
}
catch(B b)
{
 cout<<"caught a base class \n";
}
catch(D d)
{
  cout<<caught a derived class .\n";
}
 return 0;
}
```

ii)

```
void Xhandler(int test) throw()
{
if(test==0) throw test;
if(test==1) throw 'a';
if(test==2) throw 123.23;
}
```

UNIT 5

6. a) Develop a program to read the data stored in two separate files and write the data of first file into a third file, also append the content of second file to the same third file. **10**

   b) Develop a program which stores the details (min of 4 attributes) of patients in a file "PATIENT.DAT". Program should incorporate features of reading, writing, appending and updating the file. **10**

OR

7. a) Demonstrate with an example program to define namespaces, creating unnamed namespaces, nested namespace. Also illustrate how the members of various namespaces are accessed. **05**

   b) Develop a program to create two lists and perform the following operations **10**

      i) Add two elements at the end of the lists1
      ii) Remove an element at the front of list2
      iii) Merge two lists
      iv) Sort the two lists and then merge them.
      v) Reverse list1

   c) Develop a program to create small inventory file that contains item's name and its cost. Also read the inventory file created and display its contents on the screen. **05**

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