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FINALTERM EXAMINATION
Spring 2010
CS304- Object Oriented Programming (Session - 4)

Question No: 1 (Marks: 1) - Please choose one

Classes like TwoDimensionalShape and ThreeDimensionalShape would normally be concrete, while classes like Sphere and Cube would normally be abstract.

► **True**
► False

Question No: 2 (Marks: 1) - Please choose one

Virtual functions allow you to

► create an array of type pointer-to-base class that can hold pointers to derived classes.
► create functions that can never be accessed.
► group objects of different classes so they can all be accessed by the same function code.
► use the same function call to execute member functions of objects from different classes

Question No: 3 (Marks: 1) - Please choose one

A pointer to a base class can point to objects of a derived class.

► **True**
► False

Question No: 4 (Marks: 1) - Please choose one

A copy constructor is invoked when

► a function do not returns by value.
► **an argument is passed by value.**
► a function returns by reference.
► an argument is passed by reference.

Question No: 5 (Marks: 1) - Please choose one

Each try block can have _____ no. of catch blocks.

► 1
► 2

► 3
► **As many as necessary.**

Question No: 6 (Marks: 1) - Please choose one

Non Template Friend functions of a class are friends of _____instance/s of that class.

► All
► One specific
► **All instances of one date type**
► None of the given options

Question No: 7 (Marks: 1) - Please choose one

Template functions use _____ than ordinary functions.

► Greater Memory
► Lesser Memory
► Equal Memory
► None of the given options

Question No: 8 (Marks: 1) - Please choose one

The find() algorithm

► finds matching sequences of elements in two containers.
► finds a container that matches a specified container.
► takes iterators as its first two arguments.
► takes container elements as its first two arguments.

Question No: 9 (Marks: 1) - Please choose one

The copy() algorithm returns an iterator to

► the last element copied from.
► the last element copied to.
► the element one past the last element copied from.
► the element one past the last element copied to.

Question No: 10 (Marks: 1) - Please choose one

If you define a vector v with the default constructor, and define another vector w with a one-argument constructor to a size of 11, and insert 3 elements into each of these vectors with push_back(), then the size() member function will return

_____ for v and _____ for w.

- ► 11 for v and 3 for w.
- ► 0 for v and 0 for w.
- ► 0 for v and 3 for w.
- ► **3 for v and 11 for w.**

Question No: 11 (Marks: 1) - Please choose one

Which is not the Advantage of inheritance?

- ► **providing class growth through natural selection.**
- ► facilitating class libraries.
- ► avoiding the rewriting of code.
- ► providing a useful conceptual framework.

Question No: 12 (Marks: 1) - Please choose one

```
class DocElement
{
public:
    virtual void Print() { cout << "Generic element"; }
};
class Heading : public DocElement
{
public:
    void Print() { cout << "Heading element"; }
};
class Paragraph : public DocElement
{
public:
    void Print() { cout << "Paragraph element"; }
};
void main()
{
    DocElement * p = new Paragraph();

    p->Print();
}
```


When you run this program, it will print out a single line to the console output.

What will be in that line?

Select one correct answer from the following list:

► **Generic element**

► Heading element

► Paragraph element

► Nothing will be printed.

Question No: 13 (Marks: 1) - Please choose one

Which type of inheritance is being represented by the following statement,
class X : public A, public B { ... ... };

► Single inheritance
► Multiple inheritance
► Double inheritance
► None of the given options

Question No: 14 (Marks: 1) - Please choose one

When we write a class template the first line must be:

► template < class *class_name*>
► template < class *data_type*>
► **template < class T >**

Here T can be replaced with any name but it is preferable.

► class class-name()

class template<*class_name*>

Question No: 15 (Marks: 1) - Please choose one

Function templates should be used where code and behavior must be identical.

► True
► False

Question No: 16 (Marks: 1) - Please choose one

Which of the following is/are advantage[s] of generic programming?

► Reusability
► Writability

- Maintainability
- **All of given**

Question No: 17 (Marks: 1) - Please choose one

The specialization pattern <T*> after the name says that this specialization is to be used for every,

- data type
- meta type
- virtual type
- pointer type

Question No: 18 (Marks: 1) - Please choose one

A range is often supplied to an algorithm by two _____ values.

- italic
- iteration
- iterator
- None of given

Question No: 19 (Marks: 1) - Please choose one

Which of the following is an integral part of an object?

- State
- Behavior
- Unique identity
- All of the given

Question No: 20 (Marks: 1) - Please choose one

Consider the following statement

Cupboard has books

What is the relationship between Cupboard and books?

- Composition
- Aggregation
- Inheritance
- None of the given options

Question No: 21 (Marks: 1) - Please choose one

Which sentence clearly defines an object?

- ► one instance of a class.
- ► another word for a class.
- ► a class with static methods.
- ► a method that accesses class attributes.

Question No: 22 (Marks: 1) - Please choose one

_____, which means if A declares B as its friend it does NOT mean that A can access private data of B. It only means that B can access all data of A.

- ► Friendship is one way only
- ► Friendship is two way only
- ► NO Friendship between classes
- ► Any kind of friendship

Question No: 23 (Marks: 1) - Please choose one

The statement objA=objB; will cause a compiler error if the objects are of different classes.

- ► True
- ► False

Question No: 24 (Marks: 1) - Please choose one

Consider the call given below of an overloaded operator "+",
Rational_number_1 + Rational_number_2
Where Rational_number_1 and Rational_number_2 are the two objects of Rational_number class (a user defined class). Identify which of the above two objects will be passed as an argument to the overloaded operator function?

- ► Rational_number_1
- ► Rational_number_2
- ► Both Rational_number_1 & Rational_number_2
- ► any of the two objects, randomly

Question No: 25 (Marks: 1) - Please choose one

If a class D has been derived using protected inheritance from class B (If B is a protected base and D is derived class) then public and protected members of B ---------- accessed by member functions and friends of class D and classes derived from D

- ► can be
- ► cannot be
- ► does restirct to be
- ► not given

Question No: 26 (Marks: 1) - Please choose one

In Private ---------- only member functions and friend classes or functions of a derived class can convert pointer or reference of derived object to that of parent object

- ► specialization
- ► inheritance
- ► abstraction
- ► composition

Question No: 27 (Marks: 2)

Give two uses of a destructor.

Question No: 28 (Marks: 2)

Describe the way to declare a template class as a friend class of any other class.

Question No: 29 (Marks: 2)

Give the name of two basic types of containers collectively called First class containers?

Question No: 30 (Marks: 2)

State any conflict that may rise due to multiple inheritance?

Question No: 31 (Marks: 3)

What will be the output after executing the following code?

```
class c1{
public:
virtual void function(){
cout<<"I am in c1"<<endl;
}


};
class c2: public c1{
public:
void function(){
cout<<"I am in c2"<<endl;
```

```
}

};
class c3: public c1 {
public:
void function(){
cout<<"I am in c3"<<endl;
}

};

int main(){

c1 * test1 = new c2();
c1 * test2 = new c3();
test1->function();
test2->function();
system("PAUSE");
return 0;
}
```


Question No: 32 (Marks: 3)

If we declare a function as friend of a template class will it be a friend for a particular data type or for all data types of that class.

Question No: 33 (Marks: 3)

Tell the logical error/s in the code given below with reference to resource management; also describe how we can correct that error/s.

```
class Test{

public:
int function1(){
                try{
                    FILE *fileptr = fopen("filename.txt","w");
                     throw exception();
                     fclose(fileptr);
                     return 0;
                     }
                     catch(Exception e){
```

```
                    ...
                    }
}
};
```

Question No: 34 (Marks: 5)

What is the output produced by the following program?

```
#include<iostream.h>

void sample_function(double test) throw (int);

int main()
{
        try
        {
                cout <<"Trying.\n";
                sample_function(98.6);
                cout << "Trying after call.\n";
        }
        catch(int)
        {
                cout << "Catching.\n";
        }

        cout << "End program.\n";
        return 0;
}
void sample_function(double test) throw (int)
{
        cout << "Starting sample_function.\n";
        if(test < 100)
          throw 42;
}
```


Question No: 35 (Marks: 5)

The code given below has one template function as a friend of a template class,

1. You have to identify any error/s in this code and describe the reason for error/s.
2. Give the correct code after removing the error/s.

```
template<typename U>
```

```
void Test(U);
template< class T >

class B {
        int data;
        public:
        friend void Test<>( T );
};

template<typename U>
void Test(U u){
   B < int> b1;
   b1.data = 7;
   }
int main(int argc, char *argv[])
{
   char i;
   Test(i);
   system("PAUSE");
   return 0;
}
```


Question No: 36 (Marks: 5)

Consider the following class,

```
class Base
{
        char * p;
public:
        Base() { p = new char[10]; }

        ~Base() { delete [] p; }
};
class Derived : public Base
{
        char * q;
public:
        Derived() { q = new char[20]; }

        ~Derived() { delete [] q; }
};
void foo()
{
```

```
        Base* p = new Derived();

        delete p;
}
```

With this program, every time function foo is called, some memory will leak. Explain why memory will leak. Also, explain how to fix this problem.