

CS304 Object Oriented Programming
Mid Term Examination – Spring 2005
Time Allowed: 90 Minutes

Please read the following instructions carefully before attempting any of the questions:

1. Attempt all questions. Marks are written adjacent to each question.
2. Do not ask any questions about the contents of this examination from anyone.
 - a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.
 - b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.
 - c. Write all steps, missing steps may lead to deduction of marks.
 - d. All coding questions should be answered using the **C ++** syntax.

You are allowed to use the Dev-C++ compiler to write and test your code. If you do so please remember to copy and paste your code into the examination solution area. **(Do NOT share your code; your colleague could get higher marks than you!!) **WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.**

Total Marks: 40 Total Questions: 3

Question No. 1 Marks : 30

Design and implement a **String** class that makes the following code work properly. The class should store the string in a dynamically allocated memory.

```
int main()
{
String X, Y = "World!";
X = "Hello " + Y;
cout<< X << endl;
return 0;
}
```

Question No. 2 Marks : 05

- a.** Write the exact type of *this* pointer in a *member function* of a class **XYZ**. **02**
- b.** Write three distinct situations in which copy constructor of a class is called. **03**

Answer:

a)

XYZ *this;

b)

1. Assignment of private data members at the time of object creation.
2. When an object is passed by value to a function.
3. When allocating memory dynamically we use copy constructor to avoid

dangling pointer issue.

Question No. 3 Marks : 05

```
class Complex
```

```
{
```

```
  private:
```

```
  double x,y;
```

```
  static int z;
```

```
  public:
```

```
  Complex(double = 0.0);
```

```
  friend ostream& operator<<(ostream&, const Complex&);
```

```
  static int doSomething( ) { z = 2 * y; return z; }
```

```
};
```

a. What is wrong in the definition of member function **doSomething()**. **03**

Answer:

Static keyword because using static key word we are declaring a static member function doSomething(). Which can not use non static data members.

b. What will be the effect of writing the friend function **operator<<(...)** in **private** part of the above class? **02**

Answer:

There will be no effect on friend function if we write it in private part. Friend function is a friend function and can use any private or public data member of the class. Where ever we declare it in class body.