	Course Name:	Software Design & Analysis	Course Code:	CS3004
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	Section:	(All)	Page(s):	3
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Student : Name:_____ **Roll No.**_____

Q1 (10 marks)

1. Which of the following is incorrect

A. Analysis is done before the design
B. The requirements identified in the analysis phase are used to test the software
C. Design is not necessary for implementation
D. Good design helps in maintenance

2. Which of the following is incorrect

A. Maintainable software must be modular
B. Modular software is not easy to understand
C. Modules should be independent as much as possible in a good design
D. Good abstraction hides implementation details

3. Which of the following is incorrect

A. Composition is a type of association
B. Aggregation is a type of association
C. Composition is a type of aggregation
D. Association is a type of inheritance

4. Which of the following is incorrect

A. A class diagram shows the static relationship between classes
B. A class diagram shows the dynamic relationship between classes
C. A sequence diagram can show message passing between objects
D. A sequence diagram can show message passing between systems

5. Which of the following is incorrect

A. Polymorphism is achieved through inheritance
B. Encapsulation is achieved through inheritance
C. An abstract class cannot be instantiated
D. Inheritance allows us to reuse code

Q2 (10 marks)

Improve/Rewrite the following code by using the object-oriented features:

```
class Car {...}
class Bus {...}
class Truck {...}

int total(Car* c[], int m, Bus* b[], int n, Truck* t[], int o) {
      int sum = 0;
      for (i=0; i < m; ++i)
            sum = sum + c[i]->rent();
      for (i=0; i < n; ++i)
            sum = sum + b[i]->rent();
      for (i=0; i < o; ++i)
            sum = sum + t[i]->rent();
      return sum;
}
```

Q3 (10 marks)
Consider the following description of a Police Information System:

This system helps the Java Valley police officers keep track of the work they are assigned to do. Officers may be assigned to investigate particular cases, to patrol particular areas, or to attend particular events such as court cases. Some work assignments are regular ongoing assignments, while others are for a particular period of time. The system information is updated by the logistics administrator, but individual officers have an interface to display their assigned work.

Now give a class diagram for this system. Show classes, inheritance and associations. However, you do not need to show data members or member functions.