

## C5-R3: OBJECT ORIENTED METHODOLOGY

### NOTE:

1. Answer question 1 and any FOUR questions from 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.
  - a) What is Common Object Request Broker Architecture (CORBA)? With diagram, explain how the generated code is used within the CORBA.
  - b) Explain the term inheritance with example. What are its benefits?
  - c) Explain compiling Java Code in debug mode?
  - d) Why do analysis and design must produce, at the minimum the classes in the system, their public interfaces and their relationships to other classes, especially base classes?
  - e) Eiffel is an ISO-standardized object-oriented programming language. What are the design goals of Eiffel?
  - f) Write a program that asks the user for their name and then prints a personalized greeting using Java.
  - g) Describe the problem with modeling behavior in an abstract class?

(7x4)
2.
  - a) What is polymorphism in object oriented programming? What are the advantages of it? Implement the following scenario using any object oriented language.  
Two subclasses (Cat and Dog) are derived from an Animal Base class. Two Cat objects and one Dog are instantiated and given names and then they are gathered in a list ([a, b, c]) and their *talk* method is invoked.
  - b) Compare the procedural programming approach with object oriented programming approach. Illustrate polymorphism with an example.
  - c) Swing is a platform independent, Model-View-Controller GUI framework for Java. What are the different traits it possesses?

(6+6+6)
3.
  - a) What are the object oriented design model measurement/metrics to be used, to measure the design of object oriented system? Briefly explain all.
  - b) What is the meaning of interfaces and when are they used?
  - c) Which are the steps to be followed, for programming a client in Java? How are they different from, when programming a server in Java?

(8+4+6)
4.
  - a) Exceptions are generated by the Java runtime system in response to errors that are detected when classes are loaded and their methods are executed. Briefly explain how these exceptions are handled in Java.
  - b) What is a thread? Write a program to start, stop, suspend and resume threads in Java.
  - c) Given the following class, called NumberHolder, modify the code that creates an instance of the class, initializes its two member variables and then displays the value of each member variable.

```
public class NumberHolder {
    public int anInt;
    public float aFloat;
}
```

(6+8+4)

**5.**

- a) "A subclass cannot override methods are declared final in the super class." Justify with an example.
- b) What are the types of reactions and associated applet method when any major events occur with respect to the applet life cycle?
- c) What is JDBC and how does it differ from ODBC? Briefly explain the fundamental issues encountered when writing any database application.

**(6+6+6)**

**6.**

- a) While writing and debugging a program in Java following error occurs:  
"The compiler complains that it can't find a class."  
Make a list of all possible solutions.
- b) The URL class provides several methods that let you query URL objects. Write a program to create a URL from a string specification and then uses the URL object's accessor methods to parse the URL.
- c) Briefly explain the simplest form of deployment descriptor that is needed to deploy a Java[tm] Servlets.

**(6+6+6)**

**7.**

- a) Compare Smalltalk, C++ and Java with respect to the following OO concepts/syntax.
  - i) Abstract class
  - ii) Dynamic binding
  - iii) Inheritance
  - iv) Pointers
- b) Different methods are used to perform operation on the data contained in an object or static class variables. Briefly explain the access modifiers available for the method declaration in Java.
- c) A software quality factor is a non-functional requirement for a software program which is not called up by the customer's contract but desirable. Make a list of quality factors. (Any eight)

**(6+6+6)**