Enrollment No: _____ **Exam Seat No:**_____

C.U.SHAH UNIVERSITY

Winter Examination-2015

Subject Name: Object Oriented Methodology &Implementation

Subject Code: 5TE01OOM1 **Branch:** M.Tech (CE)

Semester: 1 **Date:** 21/12/2015 **Time:** 10.30 **To** 1.30 **Marks:** 70

Instructions:

(1) Use of Programmable calculator and any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

SECTION – I

Q-1 **Attempt the Following questions** **07**

a. Compare Aggregation versus Composition.
b. The fact that the same operation may apply to two or more classes is called what?
c. List the Advantages of Use Case Diagram.
d. Why is an Encapsulation important?
e. State the purpose of modeling a Sequence Diagram.
f. What is a Design Pattern?
g. List the Challenges in Designing with Inheritance.

Q-2 **Attempt all questions**

a. Give differences between 'is-a' and 'has-a' relationship with suitable example. **05**
b. Consider a situation where a library wants to add a feature that enables the librarian to print out a list of all the books that have been checked out at a given point in time. Construct a sequence diagram for this use case. **05**
c. Explain exception handling in Java. How is it done? **04**

OR

a. Suppose the due-date for a book depends not only on the date the book is issued but also on factors such as member type (assume that there are multiple types of membership), number of books already issued to the member and any fines owed by the member. Which class should then be assigned the responsibility to compute the due date and why? **05**
b. A university registration system has a class Student that tracks student information. When a student's CGPA falls below a certain level, he/she is placed on academic probation. Would you model this by creating a subclass WeakStudent that extends Student? **05**
c. Explain this and Super keyword in java with example. **04**

Q-3 **Attempt all questions**

a. Explain Iterator design pattern with example. **07**

b. What is Object serialization? Create a student class and write a program to serialize object of this class. **07**

OR

Q-3 **a.** Explain basic form of Singleton design pattern. How multi-threading can be handled in singleton? **07**

b. What is RTTI (Runtime Type Identification)? Explain Reflection mechanism in JAVA. **07**

SECTION – II

Q-4 **Attempt the Following questions** **07**

a. Why Modeling is an Essential?

b. Differentiate between Class and Object.

c. Describe Single and Multiple Inheritance.

d. How is object oriented analysis different from object oriented design?

e. Define Marshalling and Demarshalling.

f. List the Components of Class Diagram.

g. What are the characteristics of an object?

Q-5 **Attempt all questions**

a. Explain client server architecture system by example. **05**

b. Explain why mistakes made in the requirements analysis stage are the costliest to correct. **05**

c. Discuss various characteristics of Associations. **04**

OR

Q-5 **a.** How can the difficulty in accessing objects running in a different Java Virtual Machine be handled? **05**

b. Prepare an object diagram for the following. Sink, freezer, refrigerator, table, light, switch, window, smoke alarm, burglar alarm, cabinet, bread, cheese, ice, door, and kitchen. **05**

c. Give an example when association is modeled as class? When is it useful to model an association as a class? **04**

Q-6 **Attempt all questions**

a. Explain Java RMI. **07**

b. A hotel reservation system supports the following functionality: **07**

a. Room reservation
b. Changing the properties of a room (for example, from non-smoking to smoking)
c. Customer check-in
d. Customer check-out

Draw the system use cases for the above functionality.

OR

Q-6 **Attempt all Questions**

a. Write a note on MVC architecture. **07**

b. A room has the following options for climate control: blow a fan, use an air conditioner, employ a heater, or do nothing. A temperature regulator for the room operates can be set in one of the four different modes to choose the desired option, **07**

a. Do nothing: None of the three devices (fan, air-conditioner and heater) is active.
b. Fan: The fan blows for 10 minutes and then stays inactive for another 10 minutes; the cycle repeats.
c. Air conditioner: The air conditioner immediately turn on. If the room temperature is too high, it operates an air conditioner until the room temperature hits the set temperature.
d. Heater: The heater immediately turn on. If the room is too cold, it operates a heater until the room temperature hits the set temperature.

Develop the state transition diagram.