Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

III SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING)
END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: OBJECT ORIENTED PROGRAMMING [CSE 2104]

REVISED CREDIT SYSTEM

Time: 3 Hours **Date: 05-12-2015** **MAX. MARKS: 50**

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data, if any, may be suitably assumed.

1A. Java is robust and architectural neutral. Justify the statement with enough reasons. 3M

1B. Explain the difference between logical AND and short circuit AND operators with appropriate examples. 2M

1C. Why do you make a method **static** instead of non-static? Give an example where it would be useful. Implement a static method **median( )** which takes 1D array of type **double** as parameter and returns the median of the array. Also write main( ) to test the method.
Note: The **median** of a set of numbers is the middle-most number in the sorted array if the array is of odd length, if the array is of even length, then median is the average of the middle two numbers in the sorted array. 5M

2A. When do you make a method synchronized? Explain with an example program. 4M

2B. Create a **USMoney** class with two private integer instance variables **dollars** and **cents**. Add a constructor with two parameters for initializing an **USMoney** object. The constructor should check that the **cents** value is between 0 and 99 and, if it is greater than or equal to 100, transfer some of the **cents** to the **dollars** variable to make it between 0 and 99. If cents value is lesser than zero then transfer from **dollars** to **cents** to make sure that its value is between 0 and 99. Add a **plus( )** method to the class that has two integer parameters **dollars** and **cents**. It modifies the **USMoney** object whose **plus( )** method is being invoked by adding the given values to the object's **dollars** and **cents** instance variables. It should also ensure that the value of the **cents** instance variable is restored to a value between 0 and 99. For example, if **money** is a **USMoney** object with 5 dollars and 80 cents, then **money.plus(1, 90)** should change **money**'s instance variables to correspond to 7 dollars and 70 cents. Also, create a **USMoneyDemo** class that tests the **USMoney** class. 3M

2C. Write any three major differences between each of the following:

i. Method overriding and Method overloading.
ii. Interfaces and Abstract classes 3M

3A. Explain the use of *super* keyword in different contexts with examples for each. 4M

3B. Create a generic **static** method **contains( )** that takes an array of type **T[ ]** and a value of type **T** as its parameters and it returns true if the value appears in the array. Use the **equals( )** method to determine whether two values are equal. Then create a **ContainsDemo** class that tests the **contains( )** method using an array of integers and using an array of strings. 3M

3C. Explain the skeleton of an applet and its architecture. Also show the order of invocation of different methods when an applet is loaded and removed. 3M

4A. How are swings better than AWT? Write a Swing Applet program to show two text fields three labels and a button. First label displays 'Enter main String', second label display 'Enter sub String', the first text field is the place where user enters main string and in the second text field user enters the sub string and displays on the third label whether the main string is present or not with an appropriate message on clicking a button with the name *Check*. Use appropriate layout, event dispatching thread and anonymous inner class. 4M

4B. What is Delegation event Model? Explain 3M

4C. What is a multithreaded program? Give two reasons for having two ways to create threads in Java. 3M

5A. Write a Java program to compare contents of two files and display " Files are the same" or "Files Differ" messages appropriately. Specify the names of the files to be compared on the command line. Use try-with-resources statement. 5M

5B. What will be the output when the following program is run? Explain why. Also write the output of the same program if the **return** statement is removed. 3M

```
public class FinallyDemo
{ public static void main(String[] args)
  {
    fn( );
  }
static void fn( )
{
String[] data = {"123", "234", "3456"};
try {
       for( int i=0;i<data.length;i++)
         System.out.println(data[i]);
       return;
   }
catch (Exception exc)
{
    System.out.println("Exception caught.");
}
finally
{
   System.out.println("Finally done.");
}

System.out.println("End of the function fn");
}          // End of fn()
}          // End of class
```

5C. Suppose that in the body of a method an **Exception** is thrown but is not caught. Who gets the next chance to catch the exception? 2M