Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

III SEMESTER B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: OBJECT ORIENTED PROGRAMMING [CSE 2104]

REVISED CREDIT SYSTEM
(2/12/2016)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A. List the conditions under which automatic type conversion takes place in Java. What are the type promotion rules in Java expressions? **3M**

1B. With examples, explain and demonstrate the difference between right shift and unsigned right shift operator. **2M**

1C. Define a class IntArr which hosts a 2D array of integers provide the following methods: a) Default constructor b) Parameterized constructor which initializes array of the object c) Display( ) to display array contents d) Search() to search an element in an array e) Compare() to compare two IntArr objects for equality. Write a main method to test the class. **5M**

2A. Explain synchronized methods and synchronized statements considering suitable examples **4M**

2B. Define multithreading. What are the advantages of thread based multitasking over process based multitasking? **2M**

2C. Design a class ReserveTicket with an instance variable seatsavailable, and a method void reserve (int numberofseats). If `numberofseats' is greater than `seatsavailable' then throw a user defined exception SeatFullException otherwise throw a user defined exception NegativeRequestValueException. However, in the main program one must be able to know why a seat was not booked. In case if the seats are booked then display the total number of available seats. **4M**

3A. Illustrate the uses of 'final' with examples. **3M**

3B. Create a class called Balance containing instance variables name and balance. Include a parameterized constructor. Include a method show() which displays name and balance. Put the above in a package called BalPack. Write a program outside the BalPack package which instantiates the Balance class and calls method show(). **3M**

3C. With the help of an example program illustrate how interfaces are useful in achieving run-time polymorphism. **4M**

4A. Write a program called **DisplayDirectoryTree** that takes the full path to a directory as a command-line argument and prints out all files in the directory tree rooted at the given directory and subdirectory. It should print one file name per line and indent the file names under their parent directory names. **3M**

4B. Consider the classes C and CDemo shown here:

```
class C<T>
{
    T data;
    C(T t) { data = t; }
}
class CDemo
{
   public static void main(String[] args)
   {
          C<Object> co = new C<String>("Hi");
          C<Integer> ci = new C<33>(44);
          C<int> ci = new C<int>(3);
          C<String> cs = new C<String>("Hi");
          String[ ] s = {"a", "b", "c"};
          C < String [ ] > csa = new C <String [ ] >(s);
   }
}
```

Which of the statements in the main( ) method of CDemo are illegal? Explain what is wrong with the illegal statements. **3M**

4C. Write a program to sort the array of strings by their length (instead of sorting them alphabetically) using bubble sort method. **4M**

5A. Explain the life cycle of an applet with the help of an applet skeleton. **2M**

5B. What are adapter classes? Write an example program to show their usage. **4M**

5C. Write a java program to create a Swing applet as shown in figure 5.C.1, which shows a corresponding message on pressing the button.

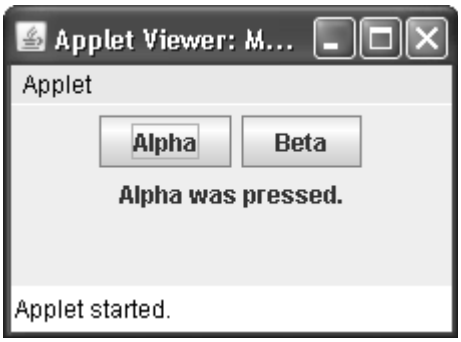

figure 5.C.1 **4M**