Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL
(A constituent unit of MAHE, Manipal)

III SEMESTER B.TECH. (INFORMATION TECHNOLOGY / COMPUTER AND COMMUNICATION ENGINEERING) END SEMESTER EXAMINATIONS, NOVEMBER 2018

SUBJECT: OBJECT ORIENTED PROGRAMMING [ICT 2101]

REVISED CREDIT SYSTEM

(20/11/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A. Write a program to do the following :

i. Create a class Student with data members: id, name, grade and department.
ii. Derive a class, Advisor which has additional data member salary and an arraylist of 5 students.
iii. Create an object of Advisor, populate all the details and display them.
iv. Using object of Advisor class, display all student details of ICT department
v. Using object of Advisor class, display all student details in descending order of their grades. **5**

1B. What are checked and unchecked exceptions? Explain with suitable example. **3**

1C. Write the output for the following code snippet with suitable justification.

i.
```
public class ex_ha {
static String str= "a" ;
 public static void main(String args[]) {
    new ex_ha().method1();
    System.out.println(str);  }
    void method1()  {
      try {
          method2(); }
     catch(Exception e) {
          str += "b"; }
         finally {    str +="u"; }
          }
     void method2() throws Exception {
          try { method3();
              str += "c";}
          catch(Exception e) {
               throw new Exception();}
               finally { str +="d"; }
           method3();
          str += "e";}

    void method3() throws Exception {
```

throw new Exception(); } }

ii. class Exam{
static void call1(float f,double d1){
System.out.println("Version 1");}
static void call1(double d1, float f){
System.out.println("Version 2");}
public static void main(String args[])) {
call1(5, 6.0); } 2

2A. Create a Java Swing program to illustrate a simple calculator performing operations +, -,*, /, %. The UI should have 1 "Calculate" button, 3 textfields to enter 2 operands and 1 operator between them. On hit of the "Calculate" button it should compute the result depending on the operator entered and display the result in a pop-up box. Proper error handling should be done for empty fields and division by zero. 5

2B. Create an application to check entered name is file or directory. If it is a file, display number of characters in a given file. If it is a directory, display number of java files under that directory 3

2C. With a suitable program demonstrate the working of Java's for-each and for loop statements. 2

3A. Create two threads "NumberThread" and "WordThread". "NumberThread" reads from "file1.txt" containing numbers in different lines. "NumberThread" checks if each of the number is a prime number and stores only prime numbers. "WordThread" reads from "file2.txt" containing words in different lines. "WordThread" checks if each of the word is a palindrome and stores only palindrome words. Write a Java program to call the "NumberThread" and "WordThread" and once the two threads are finished, combine the results i.e combine the prime numbers and Palindrome words and store them line by line in a "file3.txt". 5

3B. Write a Java Program to develop a Contact number directory application. The program should do the following: Create a class "Person" {String name, String contactNo} with suitable constructors and methods to display the class contents. Create an array of 5 person objects and write the person objects into the Contacts file. Read all the persons contact numbers. Also, write suitable main class to illustrate the working of the above defined classes. 3

3C. Mention one use for each of the following with suitable code snippet:
i. this ii. super iii. final iv. new 2

4A. Create an Interface "myInterface" in a package named "package1". The interface contains an array of 3 strings containing product names (all 3 product names initialized in the interface) and a method with following signature:
void checkName(String[] sarr)
Create a "package2" and in "package2" create a class "myClass" which implements "myInterface". checkName method checks if the product names starts with sequence of alphabets followed by underscore, followed by alphabets in the reverse order before the underscore (eg. Cello_olleC). If condition is satisfied print the product name. Otherwise, throw an exception message like Eg. "Product Name is not in required format" 5

4B. Create a class "baseClass" with the following abstract method:
abstract String add(String s1, String s2); Here s1 and s2 represent expressions.
The class containing main method should derive from the "baseClass" class. Write a 3

Java program to add two expressions and display the result.
For example if inputs are 3x+55y+12z, 44x+23y+7z then the result returned from the add function is 47x+78y+19z.

4C. Differentiate between call by value and call by reference with an example program for each. **2**

5A. What do you mean by compile time and run time polymorphism? Explain with a suitable example how it is achieved in java? **5**

5B. The retail shop has two types of customers namely Regular and Privileged. Regular customers are entitled for discount of 5% for the purchase amount more than 5000. The Privileged customers has membership card Gold and Silver. The gold card holder get a discount of 20% and silver card holder get a discount of 10% for any purchased amount. The super class(Customer) has a member CustomerId, CustomerName, totalPurchasedAmount and constructor to initialize the Customer. Regular Customer has a member discount and Privileged has a member cardType. Implement the above problem to compute the bill amount. Write suitable main class to illustrate the working of the above defined classes. Use appropriate methods and constructors in Regular and Privileged classes. **3**

5C. Write the output with proper justification.

i.
```
class rec1{
 int fun1(int x, int y) {
  if(x == 0)
        return y;
   else
      return fun1(x - 1,  x -y); }
  class r2 {
public static void main(String args[]){
   rec1 o1=new rec1();
   System.out.println(o1.fun1(2,5));   } }
```

ii.
```
String S = ""; String T = "";
 int i = 4;
 for (i = 1; i <= 3; i++);
 S = S + "!";
 for (i = 1; i < 4; i++)
T = T + "*";
 System.out.print(S);
 System.out.println(T);
```

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