Exam Date & Time: 15-Nov-2019 (09:00 AM - 12:00 PM)

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

THIRD SEMESTER B.TECH (INFORMATION TECHNOLOGY / COMPUTER AND COMMUNICATION ENGINEERING)
END SEMESTER EXAMINATIONS, NOV 2019
OBJECT ORIENTED PROGRAMMING [ICT 2155]

Marks: 50 **Duration: 180 mins.**

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

1) A) Write a Java program to create an arraylist containing 5 passwords. Among the 5 passwords, retain only those passwords in the arraylist which match the condition - password must contain atleast 2 uppercase letters, atleast 2 digits and has atleast 1 lower case letter. Once the arraylist retains only the required passwords, sort them in descending order and display them. (5)

B) Write a complete java program to implement the following requirements: Create a class Movie with the following members: Id, MovieName, Category and Year with appropriate constructors and methods. Create another class MovieList which contains a list of 5 movies and a method to DisplayMoviesYearDesc() to display the movies in the descending order of the year. (3)

C) What are nested classes? Explain the Inner class concept with an example. (2)

2) A) Create a SWING Application containing a 2 text fields (so that the user can enter 2 words) and a submit button. On hit of the submit button: Validate if the text fields are empty and if so display appropriate message to the user. If the fields are not empty then display the result (first word concatenated with the reverse of the second word) on a label field below the submit button in that screen. (5)

B) Explain the usage of synchronized keyword with suitable program. (3)

C) Explain any Four methods of the File class. (2)

3) A) Write a method that takes a String and returns a new String encoded using encoding technique mentioned. The encoding technique works by taking each letter in a string and adding an integer to it.
For example, if integer value is 13 then 'a' becomes 'n' and 'b' becomes 'o'. The letters wrap around at the end, so 'z' becomes 'm'. Assume that the String contains upper and lower case letters, and spaces, but no other characters. Lower case letters should be transformed into other lower case letters; upper into upper. Do not encode the spaces. (5)
Input to the program : abc xyz
Integer value assumed by the programmer: 10
Output expected : klm hij

B) Create a super class shape and derive a class square from shape which has a method Display which displays only the number of square objects created. Write a java program to count and display only the number of square objects created. If an object of shape is created at any point of time, generate a user defined exception "ShapeObjectCreatedException" and print "Tried to create an object of Shape". [Appropriate constructors may be suitably assumed]. (3)

C) With a simple java program, show how overriding can be prevented in case of multilevel inheritance? (2)

4) Write a java program to read a file "word.txt" containing set of words. Check each word, whether it contains vowels or not. If the word contains vowels, copy that word into a file "vowels.txt" otherwise copy the word into "nonvowels.txt". (5)

A) Also, display the number of lines in a file "word.txt".

B) Write a multi-threaded application with 3 threads(two newly created thread and one main thread): Set the name of main thread as MITThread and child threads as ICTThread and OOPThread. Main thread should display message "MIT", first thread should display "ICT" and second thread "OOP" 10 times with a delay of 1 second. Print the name and priority of all three threads. (3)

C) Write the differences between the keywords "finalize" and "finally" with suitable code snippet (2)

5) A special two-digit number is such that when the sum of its digits is added to the product of its digits, the result is equal to the original two-digit number.
Example: Consider the number 59.

A) Sum of digits = 5 + 9 = 14
Product of its digits = 5 x 9 = 45
Sum of the sum of digits and product of digits= 14 + 45 = 59 (5)
Write a program to accept a two-digit number. Add the sum of its digits to the product of its digits. If the value is equal to the number input, output the message "Special 2-digit number" otherwise, output the message "Not a Special 2-digit number".

B) Explain each of the following with suitable code snippet or a program:
i. & and && operators
ii. >>> operator (3)
iii. Automatic type conversion in java

C)

(2)

Write the output for following given code snippets.

Code Snippet 1:

```
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();
                    }
            }
```

Code Snippet 2:

```
String greet = "Hi";
String name = "Smedley";
String nickName = name.substring(0,4);
if (nickName == name.substring(0,4))
System.out.println("has real nickname");
else if (greet + name == greet + nickName)
System.out.println("no real nickname");
else
System.out.println("hmmm...changed names?");
```

-----End-----