2020

Java Programming

Time: As per Programme   Full Marks: 70

(All questions are compulsory & Figure in the right-hand side margin indicating marks)

1. (a) Write a java program to receive a 7-digit integer number and assign to variable n, then extract each digit of n and display them in the output screen.   [7]

   (b) How many iterations do the following loops carry out? Assume that i is an integer variable that is not changed in the loop body.   [7]
   - (i)   for (i = 1; i <= 10; i++) . . .
   - (ii) for (i = 0; i < 10; i++) . . .
   - (iii) for (i = 10; i > 0; i− −) . . .
   - (iv) for (i = -10; i <= 10; i++) . . .
   - (v)   for (i = 10; i >= 0; i++) . . .
   - (vi) for (i = -10; i <= 10; i = i + 2) . . .
   - (vii) for (i = -10; i <= 10; i = i + 3) . . .

OR

   (c) Rewrite the following *for-loop* into a *while* Loop.   [4]

   ```
   int s = 0;
   for (int i = 1; i <= 10; i++) s = s + i;
   ```

   (d) The Govt. of India has introduced "The Finance Act, 2020", that has provided an option to citizens (Individuals) for payment of taxes at the following reduced rates:

Total Income (Rs)	Rate
Up to 2,50,000	*Nil*
From 2,50,001 to 5,00,000	5%
From 5,00,001 to 7,50,000	10%
From 7,50,001 to 10,00,000	15%
From 10,00,001 to 12,50,000	20%
From 12,50,001 to 15,00,000	25%
Above 15,00,000	30%

   Write a java program to ask the user for his/her annual income and calculate his total payable income tax as per the above rate.   [10]

2. (a) What elements does the values array contain after the following statements? [2]

   ```
   double[] values = new double[10];
   for (int i = 0; i < values.length; i++) values[i] = i * i;
   ```

   (b) Write a program that reads a sequence of integers into a one-dimensional array and then compute the sum of all elements of the array using *for-each* loop.   [8]

   (c) What is ragged array? Write a block of code to implement a ragged array.   [4]

OR

(d) State the following statements are **True** or **false**? [6]

   (i). All elements of an array are of the same type.
   (ii). An array index must be an integer.
   (iii). Arrays cannot contain string references as elements.
   (iv). Arrays cannot contain null references as elements.
   (v). Two-dimensional arrays always have the same numbers of rows and columns.
   (vi). Elements of different columns in a 2D array can have different types.

(e) Write a java program that ask the user to enter two words then capitalize the first letter of each word. [For Example: **utkAL uNiversity** would be capitalized as **Utkal University**]. [8]

3. (a) Distinguish between Abstract Class and Interface [6]
   (b) Write a program in Java to demonstrate Extending of an Interfaces. [8]

OR

   (c) Explain the followings in brief (with some chunks of Codes): [5+5+4]
        (i) Two usages of **Super** Keyword
        (ii) Method Overridding
        (iii) Wrapper Class

4. (a) Write a program in Java to demonstrate nested **try** statement. [6]
   (b) What is Thread? Explain two different ways to create a new thread in your program with some example codes. [8]

OR

   (c)Explain the purpose of **isAlive()** and **join()** method.State the distinctions between them.[7]
   (d) Distinguish between **Statement** and **PreparedStatement** with some example codes. [7]

5. (a) Write a program to demonstrate creation of Applet and change the background with red colour. [4]
   (b) What is an Event? State the distinctions between MouseEvent class and MouseListener interface. [10]

OR

   (c) What is Layout Manager? Explain different types of Layout Manager. [6]
   (d) write a java program to create a simple data form to collect student information using swing package. [8]

****