

[This question paper contains 6 printed pages.]

6586

Your Roll No.

B.Sc. (Hons.) Computer Science / I Sem. B

Paper – CS 101 : Programming Fundamentals

(Admissions of 2001 to 2009)

Time : 3 Hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt all questions.

Parts of a question must be answered together.

1. (a) What is call-by-value and call-by-reference in java ? Explain with the help of suitable example.

(5)

(b) Write a function in java to generate the following pattern for a given number n. For example for n = 5 pattern will be as follows :

(4)

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

(c) Why is Java called architecture-neutral ? Explain.

(3)

P.T.O.

- (d) What are Applets in java ? Differentiate between an Applet and Application program. (3)
2. (a) A Class W implements two interfaces X & Y. What happens if
- (i) X & Y contains a method with same name but different signature.
 - (ii) X & Y contains the variables with same name. (2+2)
- (b) Which of the followings are valid/invalid statements in java ? Justify.
- (i) `int X[] = new int [5];`
 - (ii) `int X[5] = { };`
 - (iii) `int X[5][] = new int[5];` (2×3)
- (c) Differentiate between Switch case and if else in java with the help of a suitable example. (5)
3. (a) What are Command-Line arguments in java ? Input a list of integers of n numbers and display them in sorted order. Where n is also input through command line. (1+5)
- (b) What is toString() method ? Explain with the help of suitable example. (4)

(c) Class X

```

    {
        protected int i = 5; protected int j;
        public X() { j = i; }
    }

```

Class Y extends X

```

    { int K = 10;
        public Y() { K = i; }
    }

```

If an object of Class Y is created, explain the construction of object step by step and evaluate the variables at each step. (5)

(d) Distinguish between logical AND and Short Circuit AND operator. (2)

4. Write the output of the following code segments :

(a) Class plusplus {

```

    public static void main (string args[ ])

```

```

    {
        int i = 25;
        System.out.println(++i + " " + i++ + " " + i);
    }

```

(3)

P.T.O.

```
(b) Class Demo {
    Static f()
    {
        try
            { int i = 0;
              int j = 10/i;
            }
        finally {
            System.out.println("Inside
                                f() finally"
                                );
        }
    }

    Static g() {
        try { int X[] = {10};
              X[10] = 10;
            }
        return ; }
        finally {
            System.out.println("Inside g()
                                finally");
        }
    }

    Static void h()
    { try {
        System.out.println("Hello");
      }
      finally
      {
        System.out.println("Inside h()
                            finally");
      }
    }
}
```

```
public static void main(string args[ ])
{
    try
    {
        f();
        g();
    }
    Catch(Exception e)
    { System.out.println("Caught");
    }
    h();
}
```

 (5)

5. (a) Design a Class Rational to store numbers in form of a/b & perform the following :

- (i) Write a function to add to rational numbers.
- (ii) Write a function to multiply two rational numbers. (5)

(b) Consider the following code

```
package pl;
public class X {
    int i;
    public int j;
    protected int k;
    private int w;
    :
}
```

```
package p2;  
public class Y {  
    :  
    }.
```

Discuss the access rights of variables of class X in class Y. (4)

- (c) What is dynamic method dispatch in java? Explain. (6)
- (d) Write a program in java to display number of characters in a file. Name of file is input through user. (5)