Question A: True/False:

1. You can create instances of abstract classes using the new operator only if it implements some interface.  
**Solution:** False [Concept: Abstract classes are like regular classes with data and methods, but you cannot create instances of abstract classes using the new operator.]

2. A class that contains abstract methods must be abstract. However, it is possible to define an abstract class that doesn't contain any abstract methods.  
**Solution:** True

3. A subclass can be abstract even if its superclass is concrete.  
**Solution:** True

4. A class can extend only one superclass but can implement one or more interfaces.  
**Solution:** True

5. An interface can extend only one interface.  
**Solution:** False  
[Concept: An interface can extend one or more interfaces.]

Question B: Write a recursive program to compute the factorial of a given number.  
Example: Factorial of 5 is 5*4*3*2*1 which is 120.  
The factorial of a number n can be recursively defined as follows:  
0! = 1;  
n! = n * (n - 1)!; n > 0  
**Solution:**

```java
public long factorial(int num) {
    // Base case
    if (num == 0) return 1;
    else
        return num * factorial(num - 1);
}
```
**Question C:** Write a program which displays how many number of times a button is clicked by the user. Your program should display a JFrame with a textfield and a button. Textfield should display the number of times the button was pressed. Other details and hints given inline below.

```java
import java.awt.*;
import javax.swing.*;

public class MyJFrame extends JFrame {
    private JTextField textField;
    private JButton button;
    private int numClicks = 0;

    public MyJFrame(String title) {
        super(title);
        setLayout(new FlowLayout());
        button = new JButton("Click me");
        add(button);
        MyActionListener listener = new MyActionListener();
        button.addActionListener(listener);
        textField = new JTextField(20);
        textField.setText("Button Clicked " + numClicks + " times");
        add(textField);
    }

    class MyActionListener implements ActionListener {
        @Override
        public void actionPerformed(ActionEvent e) {
            numClicks++;
            textField.setText("Button Clicked " + numClicks + " times");
        }
    }

    public static void main(String[] args) {
        MyJFrame myFrame = new MyJFrame("MyFrame");
        myFrame.setSize(400, 200);
        myFrame.setVisible(true);
    }
}
```

**Question D:** What will be drawn by the turtle in the following program?

```java
public class TurtleRecursion {
    public static void main(String[] args) {
        TurtleRecursion tr = new TurtleRecursion();
        World earth = new World();
        Turtle turtle = new Turtle(earth);
        tr.walkInStyle(turtle, 250);
        turtle.hide();
    }

    public void walkInStyle(Turtle turtle, int length) {
        // Base case
        if (length == 0) return;
        turtle.forward(length);
        turtle.penDown();
        walkInStyle(turtle, length - 50);
    }
}
```
turtle.backward(length);
turtle.penUp();
turtle.turn(90);
turtle.forward(50);
turtle.turn(-90);