1)      Giving reasons for your answer based on the type of system being developed, suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following systems:                                                    [15]
• A system to control anti-lock braking in a car
• A virtual reality system to support software maintenance
• A university accounting system that replaces an existing system
• An interactive travel planning system that helps users plan journeys with the lowest environmental impact

2)      Discuss whether professional engineers should be certified in the same way as doctors or lawyers. Give four advantages and disadvantages of certification.                     [10]
3)      List the 5 principles of agile methods.                                           [10]
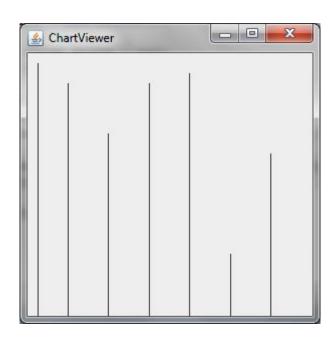4)      Suggest four reasons why the productivity rate of programmers working as a pair might be more than half that of two programmers working individually.                          [10]
5)      Discover ambiguities or omissions in the following statement of requirements for part of a ticket-issuing system:                                                                    [10]
An automated ticket-issuing system sells rail tickets. Users select their destination and input a credit card and a personal identification number. The rail ticket is issued and their credit card account charged. When the user presses the start button, a menu display of potential destinations is activated, along with a message to the user to select a destination. Once a destination has been selected, users are requested to input their credit card. Its validity is checked and the user is then requested to input a personal identifier. When the credit transaction has been validated, the ticket is issued.

6)      Using your knowledge of how an ATM is used, develop a set of use cases that could serve as a basis for understanding the requirements for an ATM system.                      [20]

7)      Write a class chart with methods                                              [25]
public void add(int value)
public void draw (Graphics2D g2)



Use the following class as your main class:

```java
import javax.swing.JFrame;

/**
   Tester class to display a stick chart.
*/
public class ChartViewer
{
   public static void main(String[] args)
   {
      JFrame frame = new JFrame();

      final int FRAME_WIDTH = 300;
      final int FRAME_HEIGHT = 300;

      frame.setSize(FRAME_WIDTH, FRAME_HEIGHT);
      frame.setTitle("ChartViewer");
      frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

      ChartComponent component = new ChartComponent();
      frame.add(component);

      frame.setVisible(true);
   }
}
```

Use the following class in your solution:

```java
import javax.swing.JComponent;
import java.awt.Graphics;
import java.awt.Graphics2D;

public class ChartComponent extends JComponent
{
   public void paintComponent(Graphics g)
   {
      Graphics2D g2 = (Graphics2D) g;
      Chart c = new Chart(getWidth(), getHeight());
      c.add(10);
      c.add(30);
      c.add(80);
      c.add(30);
      c.add(20);
      c.add(200);
      c.add(100);

      c.draw(g2);
   }
}
```