GROUP 4: CHLORIDES

1. a) CCl₄ and SiCl₄ are both colourless liquids at room temperature. Describe briefly the bonding in the two compounds. You are not expected to draw any diagrams.

   b) Unlike SiCl₄, CCl₄ has no reaction at all with water, and doesn't fume in moist air.

      (i) Why does SiCl₄ fume in moist air?

      (ii) The reaction of SiCl₄ with moist air is simply a reaction with water. Write an equation for the reaction involved.

      (iii) Explain why SiCl₄ reacts with water, but CCl₄ doesn't.

2. Lead forms two chlorides, PbCl₄ and PbCl₂.

   a) Describe briefly the bonding in these two compounds. You are not expected to draw diagrams.

   b) Which of these two compounds is the most energetically stable? Give your evidence for this.

   c) Suppose you added a little of each of these compounds to a small amount of water. Describe what you would see, and write the equation(s) for any reaction(s) you mention.