**Chapter 3 Chemical Bonding**

**Tutorial**

1. Use appropriate chemical principles to account for each of the following observations. In each part, your response must include specific information about both substances.

a) At room temperature, F2 is a gas whereas I2 is a solid.

b) The melting point of NaF is 993˚C whereas the melting point of CsCl is 645˚C.

c) The shape of IF4- ion is square planar whereas shape of BF4- ion is tetrahedral.

d) NH3 very soluble in water whereas PH3 is only moderately soluble in water

2. Aluminium chloride is an interesting compound. Its vapour has a molecular formula of Al2Cl6 at 200 ˚C, but its formula changes to AlCl3 at 800 ˚C.

Draw the dot and cross diagram of the chlorides molecules and state their shapes at the two temperatures.

Use you diagram to explain why aluminium chloride has different molecular formula at the two temperature.

|  |  |
| --- | --- |
| At 200 ˚C  Shape : | At 800 ˚C.  Shape: |

Explanation: ………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

3. Label and draw a diagram show bonding between two molecules of NH3. [3]