Solutions Sheet #1

Dissociation, electron configuration, concentration, dilution

1. Write a dissociation reaction for the following substances placed in water
2. Silver chloride
3. Sodium sulfide
4. Potassium nitrate
5. Lead II sulfate
6. Magnesium phosphate
7. Write out the complete electron configuration for the following elements
8. Hydrogen
9. Arsenic
10. Chlorine
11. Titanium
12. Tin

Concentration:

1. An effective, inexpensive, and readily available mouthwash is a 5% W/V solution of table salt. What volume of this solution can be made from 18.0 g of salt?
2. A saturated solution of toxic lead II sulfate in a car battery has a 4.25% W/V concentration. How much acid would be present in 500.0 ml of solution?
3. A sample of well water contains 0.24 mg/L of dissolved iron. What mass is present in a 450.0 mL cup of water?

Dilution:

1. What volume of concentrated 17.8 mol/L of sulfuric acid is needed to make 2.00 L of 0.200 mol/L of diluted solution?
2. Water is added to 200.0 mL of 2.40 mol/L NH3(aq) cleaning solution, until the final volume is 1.000 L. Find the molar concentration of the final, diluted solution.
3. What is the concentration of a 15.50 mL sample of hydrogen chloride solution if the 450.0 mL of the diluted solution that was made from it has a concentration of 0.357 mol/L?

Diagnostic tests:

Describe a test or a simple procedure that would distinguish between the following:

1. A solution of an ionic compound and a solution of a molecular compound
2. A solution of an acid and a solution of a base
3. A solution of a molecular compound and pure water