Chemistry 122   **Water Equilibrium (pH and pOH)**

*Remember that all strong acids ionize 100%

1. What are the hydrogen and hydroxide ion concentrations of a solution with a pOH of 5.7?

2. What is the hydrogen ion concentration of a 0.15 M solution of nitrous acid? (8.1% ionization)

3. What is the pH of a 0.50 M $H_2S_{(aq)}$ solution? What is the pOH? (0.10% ionization)

4. Calculate the hydrogen ion concentration of a lime mixture that was prepared by placing 5.25g of calcium hydroxide in 2.50 x 10^2 mL of a solution. (4.0% dissociation)

5. What mass of hydrogen bromide would be contained in 225 mL of a solution that has a pOH of 12.3? (strong acid)

6. What is the hydroxide ion concentration of 5.00 x 10^2 mL of a solution that was prepared by dissolving 10.37g of ethanoic (acetic) acid? (1.3% ionization)

7. Calculate the hydrogen ion concentration in a solution prepared by dissolving 2.7g of barium hydroxide in 290 mL of water. (100% soluble)

8. What mass of HCl is contained in 390 mL of hydrochloric acid solution that has a pOH of 11.6? (HCl is a strong acid.)

9. What is the hydrogen ion concentration of a 0.10 mol/L solution of HCN (hydrocyanic acid)? (0.0078% ionization)

10. What mass of HF (hydrofluoric acid) is in a 450 mL solution that has a pOH of 11.6? (7.8% ionization)

11. What is the pH of a 0.56 mol/L phosphoric acid solution? (23% ionization)

12. If 46 g of HF were added to water to make 309 mL of solution, what would the hydroxide ion concentration be? (7.8% ionization)