**Week 9 Chem 112 Recitation Exercises**

**Buffers and neutralization reactions**

1. A buffer is prepared containing 0.25 M $NH_3$ and 0.45 M $NH_4Cl$. ($K_b$ of $NH_3$ is $1.8 \times 10^{-5}$)

a. Calculate the pH of this buffer.

b. To 1.00 L of this buffer, 0.025 mol of HCl was added (assume no change in volume occurs). Write the net ionic equation for the neutralization reaction that occurs and calculate the new pH.

2. A buffer is prepared containing 0.20 M HOCl and 0.25 M NaOCl. To 100.0 mL of the buffer, 5.00 mL of 0.20 M NaOH was added. ($K_a$ of HOCl is $3.5 \times 10^{-8}$)

a. Write the net ionic equation for the neutralization reaction that occurs.

b. Calculate the pH of the buffer after the addition of NaOH.

c. Calculate the new concentrations of HOCl and $OCl^-$ in the buffer after the neutralization reaction.

**Solubility equilibria**

3. a. Calculate the solubility (in M) of $Ba(IO_3)_2$ in water at 25 °C given that the $K_{sp}$ of $Ba(IO_3)_2$ at 25 °C is $1.57 \times 10^{-9}$.

b. Calculate the solubility of $Ba(IO_3)_2$ in 0.0500 M $NaIO_3$.