Chem II – Exam III Warm-Up

1. What is the pH of a 0.150*M* solution of nitrous acid (HNO_2, $K_a=4.5 \times 10^{-4}$)?

2. What is the pH of a 0.500*M* NaOH solution?

3. The K_b of methylamine (CH_3NH_2) is 4.4×10^{-4}. What is the K_a of methylamine, and what is the pOH and pH of a 0.100*M* solution of methylamine in water?

4. What is the pH of a 0.200*M* solution of sodium formate, the conjugate base of formic acid ($K_a=1.7 \times 10^{-4}$)?

5. If 10.0mL of 0.100*M* HCl is added to 90.0mL of a 0.500*M* phosphate buffer of pH=7.2, what is the final pH of the solution? (H_3PO_4 – $pK_1=2.2$, $pK_2=7.2$, $pK_3=12.3$)

6. Starting with 1.0*M* phosphoric acid and 0.50*M* NaOH, how would you prepare 250mL of a 0.10*M* phosphate buffer, pH=6.0?

7. What is the pH of a 0.250*M* acetic acid solution that also contains 0.100M sodium acetate? ($K_a=1.8 \times 10^{-5}$)

8. Calculate the pH at the equivalence point when 25mL of 0.10*M* HF is titrated with 0.15*M* NaOH. How many mL of the NaOH solution will be needed to reach equivalence? ($pK_a=3.2$)