

1. (5 Pts) Determine the pH of a 0.010 M solution of Ascorbic acid, $\text{H}_2\text{C}_6\text{H}_6\text{O}_6$. ($K_{a1} = 1 \times 10^{-5}$, $K_{a2} = 3 \times 10^{-12}$)

2a. (5 Pts) Determine the pH of a solution that is 0.010 M in Ascorbic acid, $\text{H}_2\text{C}_6\text{H}_6\text{O}_6$, and 0.010 M in $\text{NaHC}_6\text{H}_6\text{O}_6$. ($K_{a1} = 1 \times 10^{-5}$, $K_{a2} = 3 \times 10^{-12}$)

b. (5 Pts) If 0.002 mole of NaOH are added to the above solution, what would be the resulting pH?

3. (5 Pts) Find the pH of a buffer that consists of 0.25 M NH_3 and 0.10 M NH_4Cl ($\text{p}K_b = 4.75$)

4. (5 Pts) The solubility of silver dichromate ($\text{Ag}_2\text{Cr}_2\text{O}_7$) at 15°C is 8.3×10^{-3} g/100 mL of solution. Calculate its K_{sp} at 15°C . (molar masses: Ag 107.9; Cr 52.0; O 16.0)