

CHM 152 Group Work 4 (over Ch. 15)

1. Calculate the pH of a 2.00 L solution containing 0.885 moles of hypochlorous acid (HClO) and 0.905 moles of NaClO. Given K_a for HClO is 3.0×10^{-8} .
2. Give the formulas for two chemicals that would make a buffer solution in water.
3. Calculate the pH when 25.0 mL of 0.100M HBr is added to 15.0 mL of 0.100M LiOH.
4. How many milliliters of 0.95M sodium hydroxide must be added to 35.0 mL of 0.85M acetic acid to reach the equivalence point? What is the pH at the equivalence point? Given: K_a for acetic acid is 1.8×10^{-5}

5. Solid calcium fluoride is added to 1.00 liter of pure water. After several hours of stirring, some of the solid remains undissolved. If the concentration of the calcium ions is 7.2×10^{-5} M, calculate the solubility product (K_{sp}).

6. Will the solubility of barium carbonate increase, decrease, or remain the same if solid barium nitrate is added to a saturated solution of barium carbonate? Explain and support with appropriate chemical reactions.

7. Why is magnesium hydroxide considered a weak base?

8. In lab Sally adds 0.0244 grams of solid calcium fluoride to 1.50 liters of pure water and stirs vigorously. For calcium fluoride $K_{sp} = 4.0 \times 10^{-11}$. Will the resulting solution be unsaturated, just saturated, or will solid be present? Show your work for full credit.

9. If you mix 225.0 mL of 0.015 M aqueous lead(II) nitrate with 125.0 mL of 0.045 M aluminum bromide, does a precipitate form? K_{sp} for $PbBr_2 = 6.9 \times 10^{-6}$. Must show your work mathematically by calculating no guessing.

10. Calculate the solubility of $\text{AuCl}_3(s)$ in pure water. K_{sp} for $\text{AuCl}_3 = 3.2 \times 10^{-25}$.

11. Calculate the molar solubility of $\text{AuCl}_3(s)$ in a solution containing 0.075 M CaCl_2 . Explain the difference between the solubility of AuCl_3 in question 10 and 11.