

Study questions for chapter 14 and 16

1. Chlorous acid HClO_2 is a weak acid that does not dissociate completely with a K_a of 1.2×10^{-2} .
 - A. What is the pH of a 0.05M solution of Chlorous acid

 - B. What is the percent dissociation of Chlorous acid in the above solution?
2. What is the pH of a 0.1M solution of diethylamine ($K_b = 1.3 \times 10^{-3}$)
3. List three different neutral salts, three different basic salts, three different acid salts
4. List two different basic oxides, two different acidic oxides
5.
 - A. What are Arrhenius acids and bases?
 - B. Bronsted-Lowry acids and bases?
 - C. Lewis acids and bases?
6. Which of the following process occur spontaneously due to an increase in entropy?
 - Building card houses
 - Card houses falling down
 - Water evaporating from my dog's dish
 - Dr. Z. cleaning up and organizing the lab
 - The lab becoming dirty and disorganized by the end of the year
 - Sugar dissolving in water
 - crystals forming as water evaporates
7. Calculate $\Delta S_{\text{surrounding}}$ for the following reaction
$$\text{XeF}_6(\text{g}) \rightleftharpoons \text{XeF}_4(\text{s}) + \text{F}_2(\text{g}); \quad \Delta H^\circ = 43 \text{ kJ}$$
8. Ammonia (NH_3) has an enthalpy of fusion of 5.65 kJ/mol and an entropy of fusion of 28.9 J/K·mol. What is the freezing point of ammonia?
9. Define the following terms: Enthalpy, entropy, internal energy, free energy.