SI Session 11 & 12

Feb. 25 and 27 2014

1. Calculate the freezing point depression of a NaCl water mixture. 25g of NaCl were poured in 100ml of water. Kf of H2O is 1.86.

2. True or False: As the molarity of a solution increases, the osmotic pressure increases.

3. Calculate the osmotic pressure of a 2M NaCl solution at 25 C.

b. What would happen to osmotic pressure if temperature was increased?

4. Which has the higher van off factor, NaCl, or CaCl2?

5. Explain the difference between a Bronsted-Lowry acid and a Lewis Acid.

6. For the reaction HCl + H20 🡪 H30++ Cl- , indicate the bronsted acid and base.

b. What does amphiprotic mean?

7. Write the equilibrium expression for the ionization of HF in water.

8. As acid strength increases what happens to the strength of the conjugate base? Explain why?

9. An HCl solution is measured to have a pH of 3.2. What is the H ion concentration?

10. Calculate the H3O conc. in a 3M HNO3 solution.

b. Calculate the OH conc.

11. Determine for the following, the stronger acid:

a. HOCl vs. HOBr

b. HOBr vs HOBr2

c. HI vs HF

d. CH3CH2COOH vs CH3COOH

e. CCl3COOH vs CH3COOH

12. Calculate the Ka of HOCl is .25 M solution of HOCl has a pH of 4.8.

13. 7% of a 1M NH4 (a weak base) solution ionized in water. Calculate the Ka, OH conc., and pH of the solution.