SI Session 9 & 10

Feb. 18

1. For NaCl, the lattice Energy is greater than the ∆H of Hydration. Is the reaction is exothermic or endothermic?

b. For NaCl, at a specific temperature, the reaction is exergonic. What does this tell you about entropy in the reaction.

2. True/False. The dissolving of a gas is an exothermic process. Explain Reasoning

b. What happens to the solubility of a gas as temperature increases?

3. The Henry’s constant for CO2 is 4.4\*10-5 at 25C. If the partial pressure of CO2 in the air is .42 atm, find how much CO2 would be dissolved in blood. Assume the solubility of CO2 in blood is the same as that in water. Answer should be in mol/L

b. What volume of CO2 can be dissolved in 2 L of blood.

4. True/False: The solubility of a gas increases as the partial pressure of the gas increases. Explain.

5. The solubility of O2 is 2\*10^-2 mol/L. If henry’s constnt for O2 is 1.66E-6, find the partial pressure of O2 in air.

6. Explain why soda is often kept cold and under pressure. What would happen to the solubility of CO2 if a can of coke was placed in a hot room and opened?

7. Explain why solutes decrease the vapor pressure of solutions

b. Calculate the vapor pressure of a 25ml ethylene glycol and 100ml water mixture at 25C. At 25C vapor pressure of pure water is 23.76 mm Hg. Density of water is 1 and density of ethylene glycol is 1.15. Molar mass of ethylene glycol is 62g/mol.

c. What would happen to the boiling point of H20 at higher altitude? Explain.

8. True or False: Any solution of NaCl H2O mixture will have a freezing point lower than 0 regardless of concentration of NaCl.

b. 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.