**ASC Gen Chem Test 2 review**

1. Differentiate Kc and Qc. Using Kc and Qc, explain when a reaction favors products and when it favors reactants.

What will happen to Kc and the equilibrium (shift left or right or no shift) of the following reaction N2O4 (g) ↔ 2NO2 (g) ΔH = 56.9 kJ/mol if

1. Volume of the container increases (all other conditions remain the same)
2. Temperature of the system is raised
3. A catalyst is added
4. Differentiate weak acids and strong acids.

Calculate the pH of:

1. 0.1 M HCl (aq)
2. 0.1 M CH3COOH (aq) (Ka = 1.8 x 10-5)

Rank the following in terms of their basicity (highest to lowest):

Na2SO4(aq), HNO3(aq), K3C6H5O7(aq), NaOH(aq), NH4Cl(aq)

1. Given a 0.2 M solution of NaC2H3O2 and Ka of HC2H3O2 = 1.8 X 10-5 at 25oC,
2. Write the dissociation reaction of C2H3O2 -
3. What is the pH of the solution?
4. What is the %dissociation of C2H3O2- ?
5. The pOH of a 0.020 M solution of C6H5NH3Cl is 7.5
6. Write the dissociation reaction of C6H5NH3+
7. What is the Kb of C6H5NH2?
8. What is the % dissociation of C6H5NH3+?
9. PCl5(g) decomposes in the following reaction:

PCl5(g) Picture PCl3(g) + Cl2(g) KP = 2.00

50.0 g of PCl5(g) is added into a 5.00 L vessel containing 10.0 g of PCl3(g) at 250oC. *R* = 0.08206 L • atm/K • mol

1. Which direction is the equilibrium shifting? Explain.
2. What is the total pressure inside the vessel at equilibrium?
3. What happens to the equilibrium if the volume of the container decreases while temperature and other conditions are kept the same? What happens to the Kc?
4. Some solids A and B are put into a container and the reaction is allowed to reach equilibrium in the following reaction

4A (s) + 5B (s) ↔ 2C (g) + D (g) Kp = 32

1. What is the total gas pressure at equilibrium?
2. Which direction will the equilibrium shift if the pressure of the system is decreased?