**Quiz 2**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. The following reaction was monitored as a function of time (8 points):

A 🡪 B + C

A plot of ln[A] versus time yields a straight line with a slope of -4.2 x 10-3 s-1.

* 1. What is the value of the rate constant, k, for this reaction?

ln[A] versus time giving a straight line implies that this is a first order reaction.

ln[A] = -kt + ln[A]o

so, the slope, m = -k = -(-4.2 x 10-3 s-1) = 4.2 x 10-3 s-1

b. Write the rate law for the reaction.

Rate = k[A]

1. What is the half-life?

First order half-life

1. If the initial concentration of A is 0.290 M, what is the concentration after 245 s?
2. In the Determination of Ka, Kb, and Percent Ionization from pH, which acid are you measuring the % dissociation versus concentration (2 points)?

Acetic acid

1. Calculate Kc for the reaction (5 points)

SnO2(s) + 2CO (g) ↔ Sn(s) + 2CO2 (g)

Given the following information:

Sn(s) +2H2O (g) ↔ SnO2(s) +2H2 (g) Kc = 0.123

H2(g) + CO2(g) ↔ H2O(g) + CO(g) Kc = 0.771

SnO2(s) +2H2 (g) ↔ Sn(s) +2H2O (g) Kc = (0.123)-1

2 H2O(g) + 2 CO(g) ↔ 2 H2(g) + 2 CO2(g) Kc = (0.771)-2

SnO2(s) + 2CO (g) ↔ Sn(s) + 2CO2 (g) Kc = (0.123)-1\*(0.771)-2 = 13.7