Chemistry 141 Name

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Quiz 12a (20 points) December 5, 2012

All work must be shown to receive credit. Give answer to correct number of significant figures.

1. (4 points) Write the appropriate equilibrium constant expression for each of the reactions below:
   1. 2 BrNO(g) ⮀ 2NO(g) + Br2(g)

Kc =

* 1. 2 KClO3(s) ⮀ 2 KCl(s) + 3 O2(g)

Kp =

1. (6 points) Consider the reaction at equilibrium:

CO(g) + Cl2(g) ⮀ COCl2(g)

Predict whether the reaction will shift left, shift right, or remain unchanged after each disturbance:

* 1. COCl2 is added to the reaction mixture.
  2. Cl2 is added to the reaction mixture.
  3. The volume of the container is reduced.

1. (5 points) Consider the reaction:

SO2Cl2(g) ⮀ SO2(g) + Cl2(g)

A reaction mixture is made containing an initial [SO2Cl2] of 0.020 M. At equilibrium, [Cl2] = 1.2 x 10-2 M. Calculate the value of the equilibrium constant (Kc).

1. (5 points) Consider the reaction:

2 H2S(g) ⮀ 2 H2(g) + S2(g) with Kp = 2.4 x 10-4 atm at 1073 K

A reaction mixture contains 0.112 atm of H2, 0.055 atm of S2, and 0.445 atm of H2S. Is the reaction mixture at equilibrium? If not, in what direction will the reaction proceed?