**CHEM 102 Recitation Ch 15 Name**

**Q1.** 1.25 moles of **NOCl** were placed in a 2.50 L reaction flask at 427ºC. After equilibrium was reached, 1.10 moles of **NOCl** remained. Calculate the equilibrium constant (***K*c**) for the reaction:

 **2NOCl(g)** $⇄$ **2NO(*g*) + Cl2(*g*)** (5.6 x 10-4)

**Q2.** For the following reaction at equilibrium in a reaction vessel:

 **2NOI(*g*)** $⇄$ **2NO(*g*) + I2(*g*)**  Δ*H*ºrxn= + 45.3 kJ/mol

which one of these changes would cause the I2 concentration to increase?

**A)** Add more NO.

**B)** Removal of NOI.

**C)** Decrease the pressure.

**D)** Decrease the temperature.

**Q3.** Calculate ***K*P** at 327°C for the reaction **CH3OH(*g*)** $⇄$ **CO(*g*) +2H2(*g*)**. The equilibrium concentrations at 327°C are [CH3OH] = 0.15 *M*, [CO] = 0.24 *M*, and [H2] = 1.1 *M*. (4.70x103)

**Q4.** Consider the reaction: **C (*s*) + CO2 (*g*)** $⇄$ **2CO (*g*).** At 1273 K, the *K*P value is 167.5. What is the *P*CO at equilibrium if the *P*CO2is 0.10 atm at this temperature? **(R = 0.08261 L.atm/mol.K; R = 8.314 J/mol.K).**

**a)** 16.7 atm **b)** 4.1 atm **c)** 1.4 atm **d)** 2.0 atm **e)** 250 atm

**Q5.** For the following reaction at a specific temperature:

 **4NH3 (*g*) + 5O2 (*g*)** $⇄$ **4NO (*g*) + 6H2O (*g*)**

 What would happen to the system if the pressure were **increased** at the same temperature?

**a)** More H2O would be produced. **b)** More O2 would be produced.

**c)** The concentration of NH3 would drop. **d)** The equilibrium would shift very slightly to the right.

**e)** Nothing would happen.

**Q6.** Use the data below to find the equilibrium constant (***K*c**) for the reaction: **A*(g)*  2B*(g)* + C*(g)***

 A*(g)*  $⇄$ 2X*(g)* + C*(g) K*c = 1.55 (2.4x10-3)

 B*(g)*  $⇄$ X*(g) K*c = 25.2

**Q7.** Consider this reaction: **2 NO*(g)* + Cl2*(g)*** $⇄$ **2NOCl*(g)****H* = –78.38 kJ

What conditions of temperature (T) and pressure (P) will produce the **highest** yield of **NOCl** at equilibrium?

**A)** low *T,* low *P*  **B)** high *T,* low *P* **C)** high *T,* high *P* **D)** low *T,* high *P*