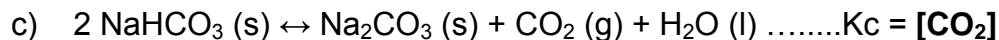
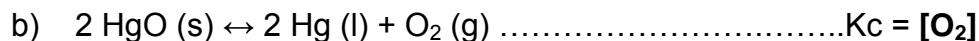
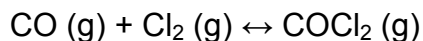


Name _____ KEY _____ Section _____ chm152 quiz 4

1) (2 pts each) Write equilibrium constant expressions (**Kc only**) for each of the following reactions.



2) (4 pts) Phosgene gas is formed via the following reaction.



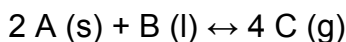
At equilibrium, the concentration of each species was measured to be:

$$[\text{CO}] = 0.47 \text{ M}, [\text{Cl}_2] = 0.17 \text{ M}, \text{ and } [\text{COCl}_2] = 3.2 \times 10^{-3} \text{ M}$$

Calculate the equilibrium constant (Kc) for this reaction.

$$Kc = [\text{COCl}_2] / [\text{CO}][\text{Cl}_2] = (3.2 \times 10^{-3}) / ((0.47)(0.17)) = \mathbf{0.04}$$

3) (3 pts) The reaction below has an equilibrium constant (K) equal to 242.7, which of the following is **correct** about the reaction.

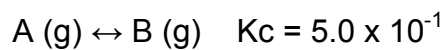


A) At equilibrium, the reaction favors products

B) At equilibrium, the reaction favors reactants

C) At equilibrium, there are equal amounts of reactants and products

4) (7 pts) The reaction shown below starts with 0.1 M of reactant A. Calculate the equilibrium concentrations of all species. **SHOW ALL WORK!**



$$K_c = [B] / [A] = 0.5$$

	A (g)	\leftrightarrow	B (g)
Initial (M):	0.1		0
Change(M):	-X		+X
Equilibrium(M):	(0.1 - X)		X

$$K_c = [B] / [A] = 0.5 = (X) / (0.1 - X) \quad \text{SOLVE FOR X!!!}$$

$$X = 0.033$$

$$[A] = 0.1 - 0.033 = 0.067 \text{ M}$$

$$[B] = 0.033 \text{ M}$$