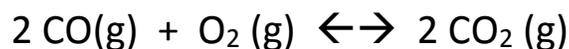


Day 7.2 Warm-Up

1. Which of the following is the best definition of chemical equilibrium?
 - a. A condition where the forward and reverse reaction rates are equal and constant.
 - b. There are equal amounts of reactants and products.
 - c. The forward and reverse reaction rates have stopped.
 - d. The product concentrations are larger than reactant concentrations.
 - e. The reactant concentrations are larger than product concentrations.

2. Which of the following will require the least time for a reaction to reach equilibrium?
 - a. K_c is a very small number.
 - b. K_c is a very large number.
 - c. K_c is approximately one.
 - d. Cannot tell without knowing the value of K_c .
 - e. Cannot tell, since the time required to reach equilibrium does not depend on K_c .



3. What is the equilibrium constant for the reaction represented by the equation above at 25°C?

a. $\frac{(P_{\text{CO}_2})^2}{(P_{\text{CO}})^2 P_{\text{O}_2}}$

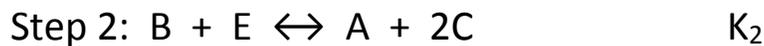
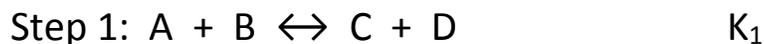
b. $\frac{P_{\text{CO}_2}}{P_{\text{CO}} P_{\text{O}_2}}$

c. $2P_{\text{CO}} + P_{\text{O}_2}$

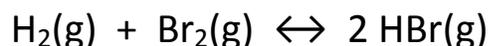
d. $\frac{P_{\text{CO}_2}}{2P_{\text{CO}} + P_{\text{O}_2}}$

e. $\frac{(2P_{\text{CO}_2})^2}{(2P_{\text{CO}})^2 P_{\text{O}_2}}$

4. The following two-step process has equilibrium constants K_1 and K_2 .



- a. $K_3 = K_1K_2$
- b. $K_3 = (K_1)^2 + K_2$
- c. $K_3 = (K_1)^2K_2$
- d. $K_3 = (K_1)^2/K_2$
- e. $K_3 = K_2/K_1$



5. Consider the equilibrium above with $K_c = 25$ at a certain temperature. A reaction vessel contains a mixture with the following concentrations: $[H_2] = 0.10 \text{ M}$, $[Br_2] = 0.10 \text{ M}$ and $[HBr] = 0.50 \text{ M}$. Which of the following statements concerning the reaction and the reaction quotient, Q , is true?

- a. $Q = K_c$
- b. $Q < K_c$; more HBr will be produced.
- c. $Q < K_c$; more H_2 and Br_2 will be produced.
- d. $Q > K_c$; more HBr will be produced.
- e. $Q > K_c$; more H_2 and Br_2 will be produced.

6. The geometry of the SO_3 molecule is best described as

- a. trigonal planar
- b. trigonal pyramidal
- c. square pyramidal
- d. tetrahedral