Equilibrium Questions

1. How can you tell if a system is at equilibrium ? List as many indicators as you can.

2. Given that a chemical reaction is at equilibrium, what is taking place at the molecular level?

3. What must a system have available in order to carry out a reaction ? What eventually happens to a reaction?

4. Is it possible to have a reaction reach equilibrium by converting all of the reactants into products?

5. What is meant by the statement “equilibrium can be approached from either direction”?

6. What does the equilibrium constant (K) represent? What could change the value of K?

7. When writing an equilibrium expression, substances that are pure solids or pure liquids are not incorporated. Why?

8. Write an equilibrium expression for the following equilibrium reactions:

(a) $T(s) + W(aq) \rightleftarrows 2\,X(g) + R(l)$

(b) $CH_4(g) + 2\,H_2S(g) \rightleftarrows CS_2(l) + 4\,H_2(g)$

9. What can be determined about a reaction from the magnitude of its K value?