Chemistry
EOC Review 6: Kinetics Equillibrium

1. When a catalyst is added to a system at equilibrium, a decrease occurs in the
   a. activation energy
   b. heat of reaction
   c. potential energy of the reactants
   d. potential energy of the products

2. According to Reference Table I, which compounds form exothermically?
   a. hydrogen fluoride
   b. hydrogen iodide
   c. ethene
   d. ethyne

3. Which statement describes characteristics of an endothermic reaction?
   a. The sign of H is *positive*, and the products have *less* potential energy than the reactants.
   b. The sign of H is *positive*, and the products have *more* potential energy than the reactants.
   c. The sign of H is *negative*, and the products have *less* potential energy than the reactants.
   d. The sign of H is *negative*, and the products have *more* potential energy than the reactants.

4. Which statement explains why the speed of some chemical reactions is increased when the surface area of the reactant is increased?
   a. This change increases the density of the reactant particles.
   b. This change increases the concentration of the reactant.
   c. This change exposes more reactant particles to a possible collision.
   d. This change alters the electrical conductivity of the reactant particles.

5. Which conditions will increase the rate of chemical reaction?
   a. decreased temperature and decreased concentration of reactants?
   b. decreased temperature and increased concentration of reactants?
   c. increased temperature and decreased concentration of reactants?
   d. increased temperature and increased concentration of reactants?

6. In a chemical reaction, a catalyst changes the
   a. potential energy of the products
   b. potential energy of the reactants
   c. heat of reaction
   d. activation energy

7. Which is a property of a reaction that has reached equilibrium?
   a. The amount of products is greater than the amount of reactants.
   b. The amount of products is equal to the amount of reactants.
   c. The rate of the forward reaction is greater than the rate of the reverse reaction.
   d. The rate of the forward reaction is equal to than the rate of the reverse reaction.

8. According to Reference Table G, which compound solubility decreases most rapidly as the temperature changes from 10°C to 70°C?
   a. $NH_4Cl$
   b. $NH_3$
   c. HCl
   d. KCl

9. Which procedure will increases the solubility of KCl in water?
   a. stirring the solute and solvent mixture
   b. increasing the surface area of the solute
   c. raising the temperature of the solvent
   d. increasing the pressure on the surface of the solvent

10. Given the equilibrium system at 25°C: $NH_4Cl(s) <-> NH_4^+(aq) + Cl^-(aq)$ (H = +3.5 kcal/mol) What change will shift the equilibrium to the right?
   a. decreasing the temperature to 15°C?
   b. increasing the temperature to 35°C?
   c. dissolving NaCl crystals in the equilibrium mixture?
   d. dissolving $NH_4NONH_3$ crystals in the equilibrium mixture?

11. Given the reaction at equilibrium: $N_2(g) + O_2(g) <-> 2NO(g)$ as the concentration of $N_2(g)$ increases, the concentration of $O_2(g)$ will
   a. decrease
   b. increase
   c. remains the same

12. Given the reaction at equilibrium: $2CO(g) + O_2(g) <-> 2CO_2(g)$ When the reaction is subjected to stress, a change will occur in the
   concentration of
   a. reactants, only
   b. products, only
   c. both reactants and products
   d. neither reactants nor products

13. Given the change of phase: $CO_2(g)$ changes to $CO_2(s)$, the entropy of the system
   a. decrease
   b. increase
   c. remains the same

14. In which reaction will the point of equilibrium shift to the left when the pressure on the system is increased?
   a. $C(s) + O_2(g) <-> CO_2(g)$
   b. $CaCO_3(s) <-> CaO(s) + CO_2(g)$
   c. $2Mg(s) + O_2(g) <-> 2MgO(s)$
   d. $2H_2(g) + O_2(g) <-> 2H_2O(g)$

15. Which substance is produced by the Haber process?
   a. aluminum
   b. ammonia
   c. nitric acid
   d. sulfuric acid

16. Given the reaction at equilibrium: $2 SO_2(g) + O_2(g) <-> 2 SO_3(g)$ + heat Which change will shift the equilibrium to the right?
   a. adding a catalyst
   b. adding more $O_2(g)$

c. decreasing the pressure
d. increasing the temperature