Review Questions

1. As the number of effective collisions between reacting particles increases, the rate of the reaction

(1) decreases
(2) increases
(3) remains the same

2. Which of the following pairs of reactants will react most quickly?

(1) sodium chloride **(aq)** and silver nitrate **(aq)**
(2) water **(l)** and hydrogen chloride **(g)**
(3) hydrogen **(g)** and propene **(g)**
(4) oxygen **(g)** and methane **(g)**

3. In the reaction $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$, as the surface area of $Mg(s)$ increases, the rate of the reaction

(1) decreases
(2) increases
(3) remains the same

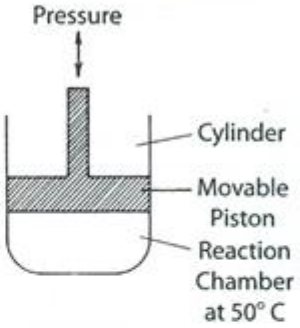
4. Consider the following equation.

$$A(g) + B(g) \rightarrow C(g)$$

As the concentration of $A(g)$ increases, the frequency of collisions of $A(g)$ with $B(g)$

(1) decreases
(2) increases
(3) remains the same

5. The reaction $A(g) + B(g) \rightarrow C(g)$ is occurring in the apparatus shown below.



The rate of the reaction can be decreased by increasing the

(1) pressure on the reactants
(2) temperature of the reactants
(3) concentration of reactant $A(g)$
(4) volume of the reaction chamber

6. Consider the following equation.

$$Mg(s) + 2H_2O(\ell) \rightarrow Mg(OH)_2(s) + H_2(g)$$

For the reaction to occur at the fastest rate, 1 g of $Mg(s)$ should be added in the form of

(1) large chunks
(2) small chunks
(3) a ribbon
(4) a powder

7. Raising the temperature speeds up the rate of chemical reaction by increasing

(1) the effectiveness of the collisions only
(2) the frequency of the collisions only
(3) both the effectiveness and frequency of the collisions
(4) neither the effectiveness nor frequency of the collisions

8. Consider the following equation.

$$Fe(s) + CuSO_4(aq) \rightarrow Cu(s) + FeSO_4(aq)$$

The Fe reacts more rapidly when it is powdered because the increased surface due to powdering permits

(1) increased reactant contact
(2) decreased reactant contact
(3) pressure to affect reaction rate
(4) warmer solution to be used

9. If the pressure on gaseous reactants is increased, the rate of reaction is increased because there is an increase in the

(1) temperature
(2) volume
(3) concentration
(4) heat of reaction

10. Consider the following equation.

$$Zn(s) + 2HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$$

The reaction occurs more slowly when a single piece of zinc is used than when the same mass of powdered zinc is used. Why does this happen?

(1) The powdered zinc is more concentrated.
(2) The powdered zinc has a greater surface area.
(3) The powdered zinc requires less activation energy.
(4) The powdered zinc generates more heat energy.