Name _______________________________                  Period ______

Practice Quiz – Reaction Rates

True/False
1. T F In a chemical reaction in which a catalyst is used, the catalyst is one of the reactants and is consumed in the reaction.
2. T F When two gases react in a chemical reaction, increasing their pressure will have no effect on the rate of the reaction.
3. T F Increasing the concentration of reactants will cause the reaction to proceed at a faster rate.

Multiple choice
4. Which expression represents a reaction rate?
   a. change in time
   b. change in concentration change in time
   c. change in concentration change in mass
   d. change in temperature change in time

5. At what stage of a reaction do atoms have the highest potential energy?
   a. When they are in the activated complex.
   b. When they are reactants.
   c. When they are products.
   d. At any stage.

6. If reactants do not have enough energy to overcome the activation energy, the chemical reaction will
   a. proceed slowly.
   b. proceed in the forward direction.
   c. proceed in the reverse direction.
   d. not proceed.

7. For a chemical reaction to occur between two reactants, reactants must
   a. be at high temperature.
   b. have low energy.
   c. collide with each other.
   d. be in the gas phase.

8. Which of the following will cause a reaction rate to increase?
   a. Decrease temperature.
   b. Increase temperature.
   c. Decrease concentration of reactants.
   d. Increase particle size.

9. A catalyst causes a reaction to proceed at a higher rate because
   a. the catalyst increases the concentration of reactants.
   b. the catalyst increases the temperature of the reaction.
   c. the catalyst decreases the energy difference between reactants and products.
   d. the catalyst lowers the activation energy in a reaction.

10. Which of the following substances acts as a catalyst in living organisms?
    a. Hormones
    b. Fats
    c. Carbohydrates
    d. Enzymes

11. Consider the following reaction:
    \[2\text{H}_2(g) + 2\text{NO(g)} \rightarrow \text{N}_2(g) + 2\text{H}_2\text{O}(g)\]
    If the both the concentrations of \(\text{H}_2\) and \(\text{NO}\) are doubled, the new rate compared to the old will be
    a. 2 times as fast.
    b. 4 times as fast.
    c. 8 times as fast.
    d. There is not enough information to determine the new rate.

12. The following mechanism is proposed for a particular reaction:
    Step 1: \(\text{NO(g)} + \text{F}_2(g) \rightarrow \text{NOF}_2(g)\)
    Step 2: \(\text{NOF}_2(g) + \text{NO(g)} \rightarrow 2\text{NOF(g)}\)
    The overall reaction is
    a. \(\text{NO(g)} + \text{F}_2(g) \rightarrow 2\text{NOF(g)}\)
    b. \(3\text{NO(g)} + 2\text{F}_2(g) \rightarrow \text{NOF}_2(g) + 2\text{NOF(g)}\)
    c. \(2\text{NO(g)} + \text{F}_2(g) \rightarrow 2\text{NOF(g)}\)
    d. \(\text{NO(g)} + \text{F}_2(g) + \text{NOF}_2(g) \rightarrow 2\text{NOF(g)} + \text{NOF}_2(g)\)

(turn over for more questions)
13. Is the reaction endothermic or exothermic?

14. What is $\Delta H$ for the reaction?

15. What is the activation energy for the reverse reaction?

16. Draw on the diagram and show what the diagram would look like if a catalyst were used in the reaction.

17. From the graph below, determine the average rate of the formation of nitrogen gas during the interval of time from 0.5 s to 1.0 s.