# Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Chemistry

Reaction Rates and Collision Theory Quiz

1. List the four factors that affect the rate of a chemical reaction.

2. Suppose two molecules that can react collide. Under what circumstances do the colliding molecules **NOT** react?

3. Why does an increase in reactant concentration cause an increase in reaction rate?

4. Explain why the rate of reaction increases when the temperature is increased.

5. Define activation energy.

6. What is an activated complex?

7. How does the activation energy of an uncatalyzed reaction compare with that of the catalyzed reaction?

8. Where is the formula of a catalyst written in a chemical equation? Why?

9. What is the effect of a catalyst on the net energy change (ΔH) of a reaction?

10. Answer the following questions using the energy diagram to the right.

Is the reaction endothermic or exothermic? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ea for the forward reaction \_\_\_\_\_\_

Activated complex \_\_\_\_\_\_

ΔH \_\_\_\_\_\_

Ea for the reverse reaction \_\_\_\_\_\_

# (KEY and Rubric) Reaction Rates and Collision Theory Quiz

**NOTE: Questions 1-9 ae worth 10 points each. Question #10 each bank is worth 2 points each…with a total of 10 points max for question #10.**

1. List the four factors that affect the rate of a chemical reaction.

**Temperature, Concentration, Particle Size**

2. Suppose two molecules that can react collide. Under what circumstances do the colliding molecules **NOT** react? **Incorrect orientation, not enough energy**

3. Why does an increase in reactant concentration cause an increase in reaction rate?

**More particles colliding (more collisions)**

4. Explain why the rate of reaction increases when the temperature is increased.

**More kinetic energy; more collisions**

5. Define activation energy.

**Energy needed in order for particles to react/collide**

6. What is an activated complex?

**The arrangement of atoms during transition from reactant to product**

7. How does the activation energy of an uncatalyzed reaction compare with that of the catalyzed reaction?

**Uncatalyzed = greater Ea**

**Catalyzed: less Ea**

8. Where is the formula of a catalyst written in a chemical equation? Why?

**Above yield arrow; not a reactant or product**

9. What is the effect of a catalyst on the net energy change (ΔH) of a reaction?

**No change**

10. Answer the following questions using the energy diagram to the right.

Is the reaction endothermic or exothermic?

**Endothermic**

Ea for the forward reaction \_\_\_\_\_**A**\_\_\_\_\_\_

Activated complex \_\_\_\_**B\_**\_\_\_\_\_\_

ΔH \_\_\_\_**D\_**\_\_

Ea for the reverse reaction \_\_\_\_\_**C\_\_\_\_**