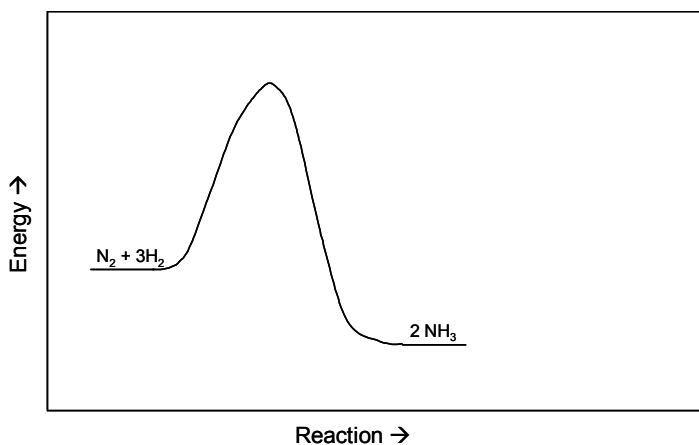


CHEM 101 Study Questions for Chapter 8

1. An increase in reactant concentration will
 - a) increase reaction rate
 - b) decrease reaction rate.
 - c) not affect reaction rate.
 - d) increase or decrease the rate depending on the exact reaction.
2. An increase in reaction temperature will
 - a) increase reaction rate
 - b) decrease reaction rate.
 - c) not affect reaction rate.
 - d) increase or decrease the rate depending on the exact reaction.
3. Explain why concentration and temperature have these effects on reaction rates.
4. In addition to reactant concentration and temperature, reaction rates also depend on:
 - a) the energy content of the reactants.
 - b) the energy content of the products.
 - c) the activation energy for the reaction.
 - d) the number of valence electrons in the reactants.
5. Is the reaction shown in the reaction diagram exothermic or endothermic?

Label the reaction diagram, clearly indicating:

- the energy level of the reactants
- the energy level of the products
- the energy absorbed or released in the reaction
- the energy of the transition state
- the activation energy



5. If you mix sulfur dioxide and oxygen in a closed container and wait, you will soon have a chemical equilibrium. The equilibrium can be described by this equation: $2 SO_2 + O_2 \rightleftharpoons 2 SO_3$
 - a) Write the equilibrium constant expression for this reaction.
 - b) Describe what this system would look like at the molecular level (What will be present? What can you say about concentrations?).
 - c) How will this system change if you now add sulfur trioxide to the container?
 - d) Which of these changes would cause a decrease in the concentration of sulfur trioxide?
 - 1) add sulfur dioxide
 - 2) remove sulfur dioxide
 - 3) add oxygen
 - 4) remove oxygen
 - e) If this is an endothermic reaction, how would removal of heat affect the equilibrium?
 - f) If you wanted to maximize the concentration of sulfur dioxide, would you add or remove heat?