

B

9. Which reaction requires a continuous supply of energy?
- a. an exothermic reaction
 - b. an endothermic reaction
 - c. a synthesis reaction
 - d. a decomposition reaction

Short Answer

10. Contrast the forming and breaking of chemical bonds in terms of energy changes.

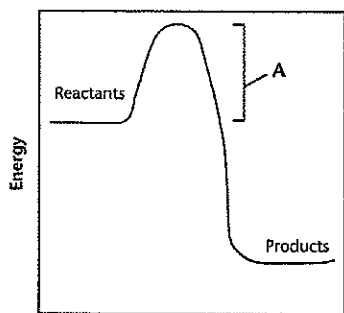
Breaking releases NRG
Forming requires NRG

11. Explain how energy is conserved during chemical reactions.

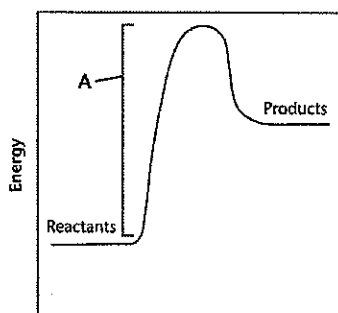
$$\text{Total Energy R} + E_{\text{act}} = E_{\text{released}} + E_p$$

The graphs below show an exothermic and an endothermic reaction. Examine the graphs and answer the questions that follow.

Chemical Reactions



Graph 1



Graph 2

12. What does *A* represent in the reactions above?

E_A Activation Energy

13. Which graph represents an endothermic reaction? Explain your answer.

#2 $E_p > E_R$

14. Which graph represents an exothermic reaction? Explain your answer.

#1 $E_p < E_R$

Other

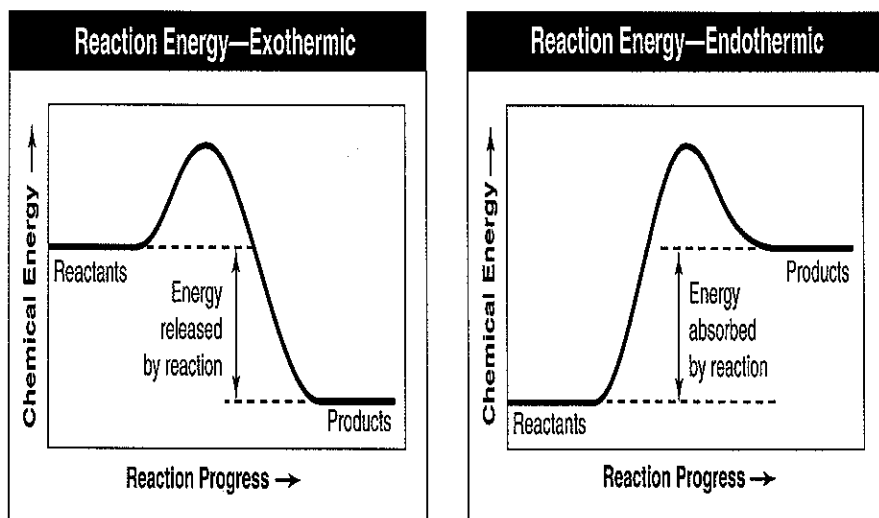


Figure 7-3

15. **Applying Concepts** In an exothermic reaction as seen in Figure 7-3, do the reactants or the products contain more chemical energy?

R

16. **Inferring** Cooking an egg white involves an endothermic reaction. Which has more chemical energy in its chemical bonds—an uncooked egg white or a cooked egg white? Use Figure 7-3 to explain your answer.

Cooked \rightarrow added heat is stored in the food.

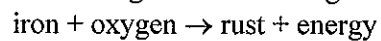
17. **Problem Solving** If the bonds in the reactants of Figure 7-3 contained 432 kJ of chemical energy and the bonds in the products contained 478 kJ of chemical energy, what would be the amount of energy change during the reaction? Would this energy be absorbed or released?

$$\begin{array}{r}
 478 \text{ kJ} \\
 - 432 \text{ kJ} \\
 \hline
 46 \text{ kJ} \text{ released} \\
 \text{Exothermic}
 \end{array}$$

18. **Using Tables and Graphs** What do the peaks on the graphs in Figure 7-3 represent?

Activation Energy

19. **Interpreting Graphics** Although the amount of energy involved is small enough that it is not noticed, iron rusts according to the following word equation:



Which of the energy diagrams in Figure 7-3 could be applied to the formation of rust? Explain your answer.

Exothermic