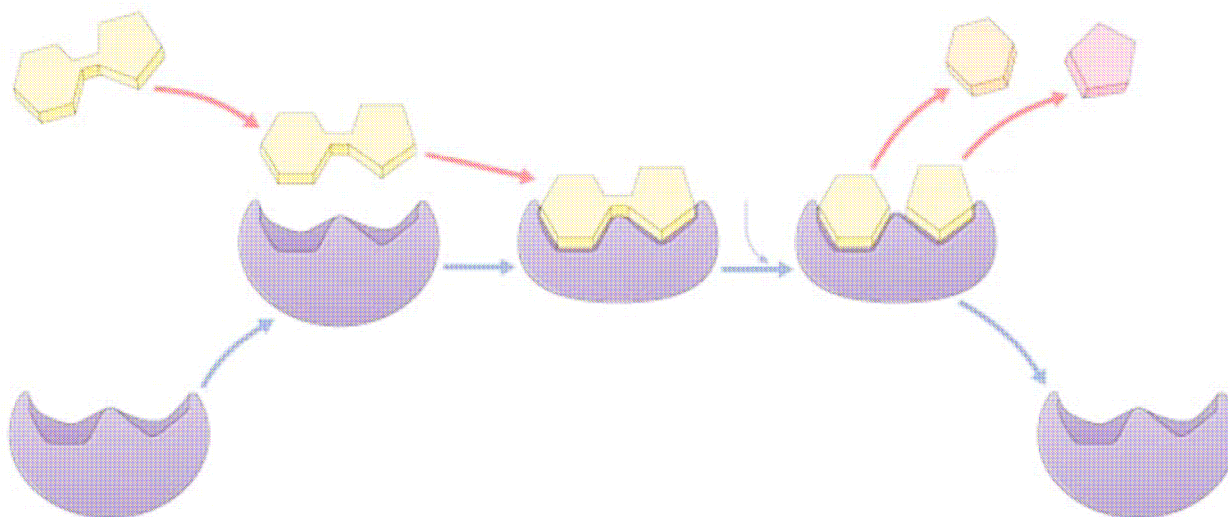


CHAPTER 6.3—6.5: All About Enzymes

1. Define activation energy.

2. How do enzymes affect the energy profile?

3. Use the following diagram to explain the catalytic enzyme cycle



4. Explain the induced fit model of enzyme action.

5. Why are enzymes said to be specific?

Name: _____

Note Set 15

6. How has the discovery of catalytic RNA changed the our understanding of enzymes.

7. Explain how temperature and pH influence the rate of enzyme reactions:

a. temperature _____

b. pH _____

c. enzyme concentration _____

d. substrate concentration _____

e. salinity _____

8. How do competitive and noncompetitive inhibitors differ in their enzyme interactions?

9. What happens during allosteric inhibition?

10. Explain the role of cofactors.

11. What is a coenzyme?

12. Explain how biochemical pathways could have evolved.

13. Describe feedback inhibition.

END OF CHAPTER 6 MULTIPLE CHOICE

1. Coenzymes differ from enzymes in that coenzymes are
 - A) only active outside the cell.
 - B) polymers of amino acids.
 - C) smaller molecules, such as vitamins.
 - D) specific for one reaction.
 - E) always carriers of high-energy phosphate.
2. Which statement about thermodynamics is true?
 - A) Free energy is used up in an exergonic reaction.
 - B) Free energy cannot be used to do work.
 - C) The total amount of energy can change after a chemical transformation.
 - D) Free energy can be kinetic but not potential energy.
 - E) Entropy has a tendency to increase.
3. In a chemical reaction,
 - A) the rate depends on the value of ΔG .
 - B) the rate depends on the activation energy.
 - C) the entropy change depends on the activation energy.
 - D) the activation energy depends on the value of ΔG .
 - E) the change in free energy depends on the activation energy.
4. Which statement about enzymes is not true?
 - A) They usually consist of proteins.
 - B) They change the rate of the catalyzed reaction.
 - C) They change the ΔG of the reaction.
 - D) They are sensitive to heat.
 - E) They are sensitive to pH.

5. The active site of an enzyme
 - A) never changes shape.
 - B) forms no chemical bonds with substrates.
 - C) determines, by its structure, the specificity of the enzyme.
 - D) looks like a lump projecting from the surface of the enzyme.
 - E) changes the ΔG of the reaction.

6. The molecule ATP is
 - A) a component of most proteins.
 - B) high in energy because of the presence of adenine.
 - C) required for many energy-producing biochemical reactions.
 - D) a catalyst.
 - E) used in some endergonic reactions to provide energy.

7. In an enzyme-catalyzed reaction,
 - A) a substrate does not change.
 - B) the rate decreases as substrate concentration increases.
 - C) the enzyme can be permanently changed.
 - D) strain may be added to a substrate.
 - E) the rate is not affected by substrate concentration.

8. Which statement about enzyme inhibitors is not true?
 - A) A competitive inhibitor binds the active site of the enzyme.
 - B) An allosteric inhibitor binds a site on the active form of the enzyme.
 - C) A noncompetitive inhibitor binds a site other than the active site.
 - D) Noncompetitive inhibition cannot be completely overcome by the addition of more substrate.
 - E) Competitive inhibition can be completely overcome by the addition of more substrate.

9. Which statement about feedback inhibition of enzymes is not true?
 - A) It is exerted through allosteric effects.
 - B) It is directed at the enzyme that catalyzes the first committed step in a metabolic pathway.
 - C) It affects the rate of reaction, not the concentration of enzyme.
 - D) It acts very slowly.
 - E) It is an example of irreversible inhibition.

10. Which statement about temperature effects is not true?
 - A) Raising the temperature may reduce the activity of an enzyme.
 - B) Raising the temperature may increase the activity of an enzyme.
 - C) Raising the temperature may denature an enzyme.
 - D) Some enzymes are stable at the boiling point of water.
 - E) All enzymes have the same optimal temperature.