

Enzymes Quiz Answer Key PDF

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Which part of the enzyme binds to the substrate?

- A. Inhibitor site
- C. Allosteric site
- D. Regulatory site
- C. Active site ✓**

Which model describes the enzyme's active site changing shape to fit the substrate?

- A. Lock and Key Model
- C. Competitive Model
- D. Non-competitive Model
- C. Induced Fit Model ✓**

How does feedback inhibition help regulate metabolic pathways in cells?

Feedback inhibition helps regulate metabolic pathways by allowing the end product to inhibit the activity of enzymes involved in its own synthesis, thus controlling the flow of metabolites and preventing excess accumulation.

Which statements about enzyme inhibitors are true? (Select all that apply)

- A. Competitive inhibitors bind to the active site ✓**
- C. Non-competitive inhibitors bind to the active site
- D. Allosteric inhibitors change enzyme shape ✓**
- C. Inhibitors always increase enzyme activity

What happens to an enzyme when it is denatured?

- A. It becomes more active

- C. It binds more substrates
- D. It speeds up reactions
- C. It changes shape and loses function ✓**

Which of the following factors can affect enzyme activity? (Select all that apply)

- A. Temperature ✓**
- C. pH ✓**
- D. Substrate concentration ✓**
- C. Enzyme concentration ✓**

Which type of enzyme catalyzes the transfer of functional groups?

- A. Hydrolases
- C. Oxidases
- D. Isomerases
- C. Transferases ✓**

Explain how enzymes lower the activation energy of a chemical reaction.

Enzymes lower the activation energy by binding to substrates and stabilizing the transition state, which reduces the energy barrier needed for the reaction to proceed.

Discuss how temperature can both positively and negatively affect enzyme activity.

Enzymes generally increase in activity with rising temperatures until they reach an optimal temperature, after which high temperatures can cause denaturation, negatively impacting their function.

Which enzyme type is primarily involved in oxidation-reduction reactions?

- A. Hydrolases
- C. Transferases
- D. Isomerases
- C. Oxidases ✓**

In feedback inhibition, what inhibits the enzyme activity?

- A. Substrate
- C. Intermediate product
- D. External inhibitor
- C. End product ✓**

What is allosteric regulation, and how does it influence enzyme activity?

Allosteric regulation is the modulation of enzyme activity through the binding of an effector molecule at an allosteric site, leading to changes in the enzyme's shape and function.

Provide examples of how enzymes are used in medical applications.

Examples of how enzymes are used in medical applications include: 1) Blood glucose monitoring using glucose oxidase, 2) Enzyme replacement therapy for conditions like Gaucher's disease, and 3) The use of proteases in the development of monoclonal antibodies.

What are the effects of enzyme denaturation? (Select all that apply)

- A. Loss of enzyme activity ✓**
- C. Permanent change in shape ✓**
- D. Increased substrate binding
- C. Enhanced reaction rate

Which enzymes are involved in rearranging atoms within a molecule? (Select all that apply)

- A. Hydrolases
- C. Isomerases ✓**
- D. Oxidases
- C. Transferases

Describe the role of the active site in enzyme specificity.

The active site plays a crucial role in enzyme specificity by providing a unique shape and chemical environment that allows only specific substrates to bind and undergo a chemical reaction.

What is the primary role of enzymes in biological systems?

- A. Provide energy
- C. Serve as biological catalysts ✓**
- D. Store genetic information
- C. Act as structural components

What are the roles of enzymes in industrial applications? (Select all that apply)

- A. Brewing ✓**
- C. Cheese-making ✓**
- D. Data storage
- C. Biofuel production ✓**

Which factor does NOT affect enzyme activity?

- A. Temperature
- C. Substrate concentration
- D. Color of the enzyme ✓**
- C. pH

Which of the following are characteristics of enzymes? (Select all that apply)

- A. They are consumed in reactions
- C. They are proteins ✓**
- D. They lower activation energy ✓**
- C. They are specific to substrates ✓**