

Enzymes Worksheet With Answers

Name: Date:

Enzymes Worksheet

This worksheet accompanies *Enzymes.ppt* and *Digestive Enzymes.ppt*



1. a) Fill in the gaps in the following sentences using the words in the box below.

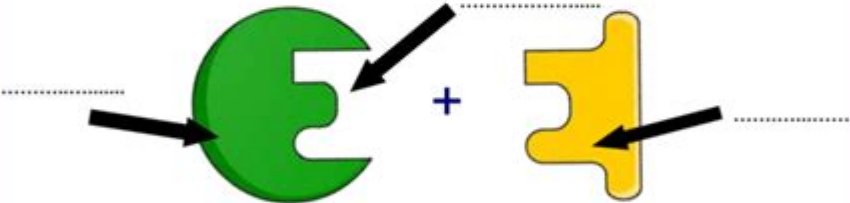
- i) Enzymes are biological that speed up chemical reactions in living organisms.
- ii) Enzymes are protein molecules, which are made up of long chains of
- iii) The sequence and type of amino acids are in each protein, so they produce enzymes with many different shapes and functions.
- iv) The shape of an enzyme is very important to its

different	catalysts	function	the same	amino acids	catalysts
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b) Enzymes catalyze chemical reactions involved in important processes in the human body. Name one of these processes.

.....

c) Label the image below with the following terms: active site, reactant, enzyme.



d) i) What is the common name for the above model?

.....

ii) Label the two components of this model on the above image.

.....

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Enzymes Worksheet with Answers: Mastering Enzyme Function and Reactions

Are you struggling to grasp the intricacies of enzyme function and reactions? Do you need a reliable resource to test your understanding and solidify your knowledge? Then you've come to the right place! This comprehensive blog post provides you with a detailed enzymes worksheet complete with answers, designed to help you master this crucial biological concept. We'll cover key enzyme

characteristics, reaction mechanisms, and factors affecting enzyme activity, all within the context of a practical, solvable worksheet. Get ready to sharpen your understanding of enzymes!

Understanding Enzymes: A Quick Refresher

Before diving into the worksheet, let's briefly revisit the fundamental concepts of enzymes. Enzymes are biological catalysts, primarily proteins, that speed up chemical reactions within living organisms without being consumed themselves. They achieve this by lowering the activation energy required for a reaction to occur.

Key Characteristics of Enzymes:

Specificity: Enzymes are highly specific, meaning they typically catalyze only one type of reaction or a very limited range of similar reactions. This specificity is due to the unique three-dimensional structure of the enzyme's active site.

Active Site: The active site is a specific region on the enzyme where the substrate (the molecule being acted upon) binds. The interaction between the enzyme and substrate follows the "lock and key" or "induced fit" models.

Regulation: Enzyme activity can be regulated through various mechanisms, including allosteric regulation, competitive inhibition, and feedback inhibition. This regulation is crucial for maintaining cellular homeostasis.

Enzymes Worksheet: Test Your Knowledge!

Now let's move on to the worksheet itself. This worksheet is designed to assess your understanding of enzyme function, reaction mechanisms, and influencing factors. Remember to try to answer each question before checking the answers provided below.

Part 1: Matching

Match the following terms with their definitions:

1. Substrate a. The molecule that binds to the enzyme
2. Enzyme b. The substance that is formed by a reaction
3. Product c. A biological catalyst that speeds up reactions
4. Active Site d. The region on the enzyme where the substrate binds

Part 2: True or False

1. Enzymes are consumed during a chemical reaction. (True/False)
2. All enzymes are proteins. (True/False)
3. Enzyme activity is unaffected by temperature and pH. (True/False)
4. Competitive inhibitors bind to the enzyme's active site. (True/False)

Part 3: Short Answer

1. Explain the difference between the "lock and key" and "induced fit" models of enzyme-substrate interaction.
2. Describe how temperature and pH can affect enzyme activity. Explain why.
3. What is an enzyme inhibitor? Briefly describe two types of inhibitors.

Enzymes Worksheet: Answers

Part 1: Matching

1. a
2. c
3. b
4. d

Part 2: True or False

1. False
2. Mostly True (although some RNA molecules also have catalytic activity - ribozymes)
3. False
4. True

Part 3: Short Answer

1. The lock and key model proposes a rigid enzyme with a perfectly complementary active site for the substrate. The induced fit model suggests that the enzyme's active site changes shape slightly to accommodate the substrate upon binding, optimizing the interaction.
2. Temperature and pH affect enzyme activity because they influence the three-dimensional structure of the enzyme. Extreme temperatures can denature the enzyme, disrupting its active site and rendering it inactive. Similarly, pH changes can alter the charge distribution on the enzyme, affecting its ability to bind the substrate. Each enzyme has an optimal temperature and pH range for maximal activity.
3. An enzyme inhibitor is a molecule that reduces or prevents enzyme activity. Two types are competitive inhibitors, which compete with the substrate for binding to the active site, and non-competitive inhibitors, which bind to a site other than the active site, causing a conformational change that reduces enzyme activity.

Conclusion

This enzymes worksheet and its accompanying answers should help you significantly improve your understanding of enzyme function and activity. By working through the questions and understanding the explanations, you've taken a key step toward mastering this fundamental concept in biology. Remember to review the key concepts and revisit this worksheet as needed to solidify your knowledge. Good luck with your studies!

Frequently Asked Questions (FAQs)

Q1: Are there any online resources that can help me further understand enzymes?

A1: Yes, many excellent online resources are available, including Khan Academy, educational YouTube channels dedicated to biology, and interactive simulations on enzyme kinetics. A simple Google search for "enzyme animation" or "enzyme kinetics simulation" will yield many results.

Q2: Can enzymes be reused?

A2: Yes, enzymes are not consumed during the reaction they catalyze. They can bind to many substrate molecules and catalyze many reactions over their lifespan.

Q3: What are some real-world applications of enzymes?

A3: Enzymes have numerous applications in various industries, including medicine (e.g., digestive aids), food processing (e.g., in cheese making), and biotechnology (e.g., in DNA technology).

Q4: How can I learn more about enzyme kinetics?

A4: Enzyme kinetics is a field that studies the rates of enzyme-catalyzed reactions. You can learn more about it through university-level biochemistry textbooks, online courses, and research papers on the topic. Keywords such as Michaelis-Menten kinetics and enzyme inhibition mechanisms will help your search.

Q5: What are some examples of enzymes found in the human body?

A5: The human body contains thousands of different enzymes. Some well-known examples include amylase (breaks down carbohydrates), pepsin (breaks down proteins in the stomach), and lipase (breaks down fats).

enzymes worksheet with answers: Pearson Biology Queensland 11 Skills and Assessment Book Yvonne Sanders, 2018-10-11 Introducing the Pearson Biology 11 Queensland Skills and Assessment Book. Fully aligned to the new QCE 2019 Syllabus. Write in Skills and Assessment Book written to support teaching and learning across all requirements of the new Syllabus, providing practice, application and consolidation of learning. Opportunities to apply and

practice performing calculations and using algorithms are integrated throughout worksheets, practical activities and question sets. All activities are mapped from the Student Book at the recommend point of engagement in the teaching program, making integration of practice and rich learning activities a seamless inclusion. Developed by highly experienced and expert author teams, with lead Queensland specialists who have a working understand what teachers are looking for to support working with a new syllabus.

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enzymes worksheet with answers: Enzymes: Structure and Function Federation of European Biochemical Societies, 1972 Before the visit with her mother's friend had ended, Libby saw the dryads and water nymphs that lived near the house.

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enzymes worksheet with answers: *Teacher's Wraparound Edition: Twe Biology Everyday*

Experience Albert Kaskel, 1994-04-19

enzymes worksheet with answers: Enzymes and Food Processing G. G. Birch, N. Blakebrough, K. J. Parker, 2012-12-06 R. S. SHALLENBERGER Cornell University, New York State Agricultural Research Station, New York, USA Among the material to be discussed in this first section of the 'Enzymes and Food Processing Symposium' is subject matter that can be viewed as a marriage between enzyme technology and sugar stereochemistry. In order to bring the significance of the material to be presented into proper perspective, I would like you to pretend, for a moment, that you are a researcher making a proposal on this subject to a Research Granting Agency in order to obtain financial support for your ideas. However, the year is 1880. Under the 'objectives' section of your proposal, you state that you intend to attach the intangible vital force or spirit-that is, the catalyst unique to the chemistry of living organisms-to an inert substrate such as sand. Thereafter you will pass a solution of right handed glucose (also known as starch sugar) past the 'vital force' and in the process convert it to left-handed glucose (also known as fruit sugar). The peer review committee would probably reject the proposal as sheer nonsense because the statements made were not only contrary to their experience, but also contrary to what they had been taught. Perhaps a few select people would have some feeling for what you were talking about, but commiseration would be the only form of support that they could offer.

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enzymes worksheet with answers: MCQs in Biochemistry G. Vidya Sagar, 2008 Medical and Paramedical graduates aspiring for higher education planning to take PG ought to appear in entrance examinations. These entrance examinations are usually patterned in objective type. Biochemistry forms an integral part of curriculum of medical and paramedical courses. It is an important subject and deals with various Chemical, Biochemical, and Physiological reactions and processes that take place inside a living system. Quite a large number of MCQs appear in PG

medical and paramedica.

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enzymes worksheet with answers: The Interaction of Enzymes, 1912

enzymes worksheet with answers: Enzyme Chemistry Colin Suckling, 2012-12-06 As the first edition of this book was going through the publication process, a revolution was taking place in the technologies available for the study of enzymes. The techniques of molecular biology, especially in genetic engineering of organisms and in site specific mutagenesis of genes, were established and were being brought into use to solve many problems in in enzymology. Added to these fundamental and applied science, not least advances the possibility of generating catalysts from antibodies has become a topic of major interest. These major innovations have changed the emphasis of much bioorganic research; whereas in the past, the protein was often the 'sleeping partner' in a study, its detailed function is now the major focus of scientific interest. Similarly in industry, the potential of genetically manipulated organisms to satisfy the needs for the production of chemicals and foodstuffs has been widely recognised. The second edition of 'Enzyme Chemistry, Impact and Applications' takes on board these new developments whilst maintaining the overall aims and views of the first edition. Many of the chapters have been completely rewritten to take account of advances in the last five years especially with regard to the impact of biologically based technologies. Although the book continues to approach its subject matter from the point of view of the chemist, the increased interdisciplinary content of much modern science will be obvious from the discussion.

enzymes worksheet with answers: Microbiology Nina Parker, OpenStax, Mark Schneegurt, AnhHue Thi Tu, Brian M. Forster, Philip Lister, 2016-05-30 Microbiology covers the scope and sequence requirements for a single-semester microbiology course for non-majors. The book presents the core concepts of microbiology with a focus on applications for careers in allied health. The pedagogical features of the text make the material interesting and accessible while maintaining the career-application focus and scientific rigor inherent in the subject matter. Microbiology's art program enhances students' understanding of concepts through clear and effective illustrations, diagrams, and photographs. Microbiology is produced through a collaborative publishing agreement between OpenStax and the American Society for Microbiology Press. The book aligns with the curriculum guidelines of the American Society for Microbiology.--BC Campus website.

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enzymes worksheet with answers: 40 Inquiry Exercises for the College Biology Lab A. Daniel

Johnson, 2009 Drawing from the author's own work as a lab developer, coordinator, and instructor, this one-of-a-kind text for college biology teachers uses the inquiry method in presenting 40 different lab exercises that make complicated biology subjects accessible to major and nonmajors alike. The volume offers a review of various aspects of inquiry, including teaching techniques, and covers 16 biology topics, including DNA isolation and analysis, properties of enzymes, and metabolism and oxygen consumption. Student and teacher pages are provided for each of the 16 topics.

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enzymes worksheet with answers: Handbook of Clinical Obstetrics E. Albert Reece, MD, PhD, MBA, John C. Hobbins, 2008-04-15 The second edition of this quick reference handbook for obstetricians and gynecologists and primary care physicians is designed to complement the parent textbook Clinical Obstetrics: The Fetus & Mother The third edition of Clinical Obstetrics: The Fetus & Mother is unique in that it gives in-depth attention to the two patients – fetus and mother, with special coverage of each patient. Clinical Obstetrics thoroughly reviews the biology, pathology, and clinical management of disorders affecting both the fetus and the mother. Clinical Obstetrics: The Fetus & Mother - Handbook provides the practising physician with succinct, clinically focused information in an easily retrievable format that facilitates diagnosis, evaluation, and treatment. When you need fast answers to specific questions, you can turn with confidence to this streamlined, updated reference.

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enzymes worksheet with answers: Fundamentals of General, Organic, and Biological Chemistry John McMurry, 2013 Fundamentals of General, Organic, and Biological Chemistry by McMurry, Ballantine, Hoeger, and Peterson provides background in chemistry and biochemistry with a relatable context to ensure students of all disciplines gain an appreciation of chemistry's significance in everyday life. Known for its clarity and concise presentation, this book balances chemical concepts with examples, drawn from students' everyday lives and experiences, to explain the quantitative aspects of chemistry and provide deeper insight into theoretical principles. The Seventh Edition focuses on making connections between General, Organic, and Biological Chemistry through a number of new and updated features -- including all-new Mastering Reactions boxes, Chemistry in Action boxes, new and revised chapter problems that strengthen the ties between major concepts in each chapter, practical applications, and much more. NOTE: this is just the standalone book, if you want the book/access card order the ISBN below: 032175011X / 9780321750112 Fundamentals of General, Organic, and Biological Chemistry Plus MasteringChemistry with eText -- Access Card Package Package consists of: 0321750837 / 9780321750839 Fundamentals of General, Organic, and Biological Chemistry 0321776461 / 9780321776464 MasteringChemistry with Pearson eText -- Valuepack Access Card -- for Fundamentals of General, Organic, and Biological Chemistry

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enzymes worksheet with answers: *Biochemistry* Christopher K. Mathews, Kensal Edward Van Holde, 1996 In its examination of biochemistry, this second edition of the text includes expositions of major research techniques through the Tools of Biochemistry, and a presentation of concepts through description of the experimental bases for those concepts.

enzymes worksheet with answers: *Edexcel International GCSE (9-1) Biology Student Book (Edexcel International GCSE (9-1))* Jackie Clegg, Sue Kearsey, Gareth Price, Mike Smith, 2021-11-12 Exam Board: Edexcel Level & Subject: International GCSE Biology and Double Award Science First teaching: September 2017 First exams: June 2019

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specialists who have a working understand what teachers are looking for to support working with a new syllabus.

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