

HOSA BIOTECHNOLOGY PRACTICE TEST (SAMPLE)

STUDY GUIDE



Prepare with structure. Pass with confidence



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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. When using micropipettes, where is accuracy generally heightened?**
 - A. At the bottom of the range
 - B. At the top of the range
 - C. In the middle of the range
 - D. It varies randomly
- 2. Which term describes a nucleotide that serves as an energy storage molecule?**
 - A. Ribose
 - B. Adenosine triphosphate
 - C. Deoxyribonucleic acid
 - D. RNA
- 3. What is the primary use of a stirring rod in a laboratory setting?**
 - A. To measure temperature accurately
 - B. To stir combinations of materials and assist in pouring liquids
 - C. To clean and absorb substances
 - D. To hold test tubes in place
- 4. Which device is known primarily for centrifuging samples?**
 - A. Fume hood
 - B. Pipet aid
 - C. Microcentrifuge
 - D. Buret clamp
- 5. What type of protection do safety glasses provide in the laboratory?**
 - A. Protects against chemical spills
 - B. Protects against loud noises
 - C. Protects against the impact of foreign objects
 - D. Protects against exposure to heat
- 6. What is the primary agency responsible for workplace safety regulations?**
 - A. NIH
 - B. EPA
 - C. OSHA
 - D. FDA

- 7. What are the two main roles of polysaccharides in organisms?**
- A. Energy storage and making genetic material
 - B. Energy storage and structural support
 - C. Genetic information storage and signal transduction
 - D. Building immune responses and storage components
- 8. What is one primary use of a disposable plastic transfer pipette?**
- A. Measuring exact volumes
 - B. Transferring small amounts of liquid
 - C. Heating liquids
 - D. Mixing solutions
- 9. Which of the following best describes a graduated pipet?**
- A. A glass tool used for smaller volumes
 - B. A cylindrical container for solid substances
 - C. A balancing device for determining mass
 - D. A heating element for chemical reactions
- 10. Which term is used to describe new biotech businesses?**
- A. Firms
 - B. Start-ups
 - C. Corporations
 - D. Ventures

Answers

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1. B
2. B
3. B
4. C
5. C
6. C
7. B
8. B
9. A
10. B

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Explanations

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1. When using micropipettes, where is accuracy generally heightened?

- A. At the bottom of the range
- B. At the top of the range**
- C. In the middle of the range
- D. It varies randomly

When using micropipettes, accuracy is generally heightened at the top of the range. This is because micropipettes are designed to deliver volumes within a specified range more precisely at the upper limits of their capacity. The mechanics of the pipette and the way liquid is drawn into and expelled from the tip often result in better performance when operating closer to the maximum volume it can handle. When utilizing a micropipette, it's important to be mindful of the volume range indicated, as operating a pipette at extreme low volumes can lead to inaccuracies due to limitations like subtle variations in the plunger force or volume measurement. Therefore, for the best accuracy and precision, it is recommended to work within the middle to upper range of the pipette's capacity, confirming that the selected volume is a good match for the micropipette's specifications.

2. Which term describes a nucleotide that serves as an energy storage molecule?

- A. Ribose
- B. Adenosine triphosphate**
- C. Deoxyribonucleic acid
- D. RNA

Adenosine triphosphate (ATP) is the term that refers to a nucleotide that acts as an energy storage molecule. It is composed of three phosphate groups, a ribose sugar, and an adenine base. The high-energy bonds between the phosphate groups in ATP are crucial because when these bonds are broken, energy is released, which can then be used by cells to perform various functions, such as muscle contraction, nerve impulse propagation, and biochemical reactions. In contrast, ribose is merely a sugar component of RNA and ATP, but it does not function as an energy molecule on its own. Deoxyribonucleic acid (DNA) is the genetic material that stores and transmits genetic information, and while its structure includes nucleotides, it does not serve the role of energy storage directly. RNA is a nucleic acid involved in protein synthesis and also does not primarily function as an energy storage molecule like ATP. Thus, ATP stands out as the critically important nucleotide for cellular energy transfer and metabolism.

3. What is the primary use of a stirring rod in a laboratory setting?

- A. To measure temperature accurately
- B. To stir combinations of materials and assist in pouring liquids**
- C. To clean and absorb substances
- D. To hold test tubes in place

The primary use of a stirring rod in a laboratory setting is to stir combinations of materials and assist in pouring liquids. Stirring rods are typically made of glass or plastic and are designed to facilitate the mixing of solutions, powders, or other materials, ensuring a homogeneous mixture. Additionally, when pouring liquids from one container to another, a stirring rod can help guide the flow and prevent spills, ensuring that the liquid goes where it's intended. In other options, measuring temperature accurately involves the use of thermometers or temperature probes, rather than stirring rods. The cleaning and absorption of substances is primarily achieved using tools like sponges, wipes, or absorbent materials. Holding test tubes in place is usually done with test tube holders or racks rather than stirring rods. Thus, the role of the stirring rod is distinct and essential for mixing and pouring, highlighting its importance in laboratory procedures.

4. Which device is known primarily for centrifuging samples?

- A. Fume hood
- B. Pipet aid
- C. Microcentrifuge**
- D. Buret clamp

The microcentrifuge is specifically designed for centrifuging small volumes of samples, typically in microcentrifuge tubes. This device utilizes centrifugal force to separate components within a liquid based on their density. For example, when a sample is spun at high speeds, denser particles will move to the bottom of the tube, allowing for the separation of cellular components, nucleic acids, or proteins from the solution. The key feature of a microcentrifuge is its compact size, allowing it to be used efficiently in laboratories that handle small sample sizes common in molecular biology and biotechnology applications. Other devices mentioned, such as a fume hood, are designed for safety and ventilation while performing chemical work, a pipet aid is used to assist in the aspiration of liquids, and a buret clamp is used for securing burets during titration. None of these fulfill the specific function of centrifuging samples like the microcentrifuge does.

5. What type of protection do safety glasses provide in the laboratory?

- A. Protects against chemical spills
- B. Protects against loud noises
- C. Protects against the impact of foreign objects**
- D. Protects against exposure to heat

Safety glasses are primarily designed to protect the eyes from the impact of foreign objects. In a laboratory setting, various activities such as handling glassware, working with equipment, or conducting experiments can result in projectiles, splashes, or flying debris. The lenses of safety glasses are crafted from shatter-resistant materials that can withstand impacts, helping to prevent injury to the eyes from unexpected accidents. While safety glasses may provide some level of protection against certain chemical splashes due to their enclosing design, this protection is not their primary function. Other types of protective eyewear, like goggles or face shields, are recommended for environments where chemical exposure is a significant concern. Additionally, they do not offer protection against loud noises or heat, which require specific protective gear. Thus, their main purpose remains focused on safeguarding the eyes from potential physical hazards in the lab environment.

6. What is the primary agency responsible for workplace safety regulations?

- A. NIH
- B. EPA
- C. OSHA**
- D. FDA

The primary agency responsible for workplace safety regulations is OSHA, which stands for the Occupational Safety and Health Administration. Established within the United States Department of Labor, OSHA's main goal is to ensure safe and healthy working conditions by setting and enforcing standards and by providing training, outreach, education, and assistance. OSHA develops regulations that cover a wide array of workplace hazards, including exposure to chemicals, safety standards for equipment, and procedures for handling emergencies. By doing so, it helps protect workers from injuries, illnesses, and fatalities that can result from unsafe work environments. In contrast, other agencies mentioned in the choices have different primary focuses. The National Institutes of Health (NIH) is mainly involved in biomedical research and public health. The Environmental Protection Agency (EPA) focuses on environmental protection and regulating pollutants and chemicals that might harm the environment. The Food and Drug Administration (FDA) is responsible for regulating food safety, pharmaceuticals, and medical devices, ensuring they are safe and effective for public use. Each of these agencies plays a critical role in their respective areas, but OSHA specifically addresses the safety and health regulations in the workplace.

7. What are the two main roles of polysaccharides in organisms?

- A. Energy storage and making genetic material
- B. Energy storage and structural support**
- C. Genetic information storage and signal transduction
- D. Building immune responses and storage components

Polysaccharides play critical roles in living organisms primarily through energy storage and providing structural support. As energy storage molecules, polysaccharides such as starch in plants and glycogen in animals serve as reservoirs for energy that can be easily mobilized when needed. These complex carbohydrates can be broken down into simpler sugars like glucose, which can then be utilized by cells for metabolic processes. In terms of structural support, polysaccharides like cellulose in plants contribute to the rigidity and strength of cell walls, allowing for the maintenance of structure in plant cells. Chitin, another polysaccharide found in the exoskeletons of arthropods and the cell walls of fungi, also serves a similar function in providing support. The other options focus on roles that polysaccharides do not usually fulfill. For instance, while genetic material involves nucleic acids rather than polysaccharides, signal transduction is often mediated by proteins and lipids instead of polysaccharides. Building immune responses is more associated with proteins and the immune system's complex cellular interactions. Therefore, the choice highlighting energy storage and structural support accurately represents the essential functions of polysaccharides in biological systems.

8. What is one primary use of a disposable plastic transfer pipette?

- A. Measuring exact volumes
- B. Transferring small amounts of liquid**
- C. Heating liquids
- D. Mixing solutions

One primary use of a disposable plastic transfer pipette is to transfer small amounts of liquid. These pipettes are designed for convenience and ease of use, making them ideal for transferring liquids in laboratory settings. They are particularly useful when precision is less critical than the need for quick and contamination-free handling of samples, such as when performing reactions, dilutions, or simple liquid transfers. Their disposable nature also ensures that there's minimal risk of cross-contamination between samples, which is crucial in many laboratory protocols. Measuring exact volumes is generally not the primary function of transfer pipettes; rather, they provide a way to grab small amounts of liquid quickly. Heating liquids is not applicable to pipettes, as this function is typically executed using specialized equipment like Bunsen burners or hot plates. Mixing solutions is generally done using vortex mixers or stirring rods, as transfer pipettes do not have the mechanism to effectively combine solutions.

9. Which of the following best describes a graduated pipet?

- A. A glass tool used for smaller volumes**
- B. A cylindrical container for solid substances
- C. A balancing device for determining mass
- D. A heating element for chemical reactions

A graduated pipet is specifically designed for measuring and transferring precise volumes of liquid, typically in smaller quantities. The term "graduated" refers to the markings or scale along the length of the pipet, which indicates the volume of liquid contained within it. This enables users to accurately draw and dispense measurements of liquid for various laboratory applications, making it essential in fields such as biochemistry and molecular biology. Unlike the other options, which describe tools that serve different purposes, the graduated pipet is focused solely on liquid measurement. For example, a cylindrical container is not intended for measuring liquid volumes precisely and lacks graduated markings, while a balancing device is used for weighing substances rather than measuring liquids. Similarly, a heating element is intended for applying heat, and does not relate to volume measurement at all. Therefore, the description of the graduated pipet as a glass tool used for smaller volumes distinctly highlights its function and importance in the laboratory.

10. Which term is used to describe new biotech businesses?

- A. Firms
- B. Start-ups**
- C. Corporations
- D. Ventures

The term "start-ups" is typically used to describe new biotech businesses because it signifies enterprises that are in the early stages of development. Start-ups often focus on innovative ideas and technologies, particularly in fields like biotechnology, where they seek to develop novel products or services that can address medical, agricultural, or environmental challenges. Start-ups are characterized by their emphasis on growth and scalability, often beginning with limited resources and looking for investment to expand their operations. They are known for their entrepreneurial spirit, frequently involving founders who are passionate about their innovations and are willing to take risks to turn their concepts into viable businesses. This terminology implies a journey of growth and advancement, making it distinct from terms like "firms" or "corporations," which typically refer to more established entities. "Ventures" is another term used in business but does not specifically denote the early-stage, innovative nature associated with start-ups.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://hosabiotechnology.examzify.com>

We wish you the very best on your exam journey. You've got this!

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