

# HOSA Biotechnology Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

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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. What are forceps mainly used for in a medical context?**
  - A. To mix ingredients**
  - B. To extract and handle objects**
  - C. To measure liquids**
  - D. To deliver precise droplets**
  
- 2. What does ATP stand for in cellular biology?**
  - A. Adenosine triphosphate**
  - B. Amino transfer protein**
  - C. Adrenaline transport peptide**
  - D. Aromatic transport protein**
  
- 3. Which of the following best describes the role of lab technicians in biotechnology?**
  - A. Conduct independent research**
  - B. Operate machinery and collect data**
  - C. Manage regulatory compliance**
  - D. Design educational programs**
  
- 4. What are the three types of pipette pumps used for?**
  - A. Measuring solids, filling liquids, transferring gases**
  - B. Filling and delivering contents of vacuum-assisted pumps**
  - C. Heating liquids, cooling solutions, mixing chemicals**
  - D. Storing samples, transferring mediums, measuring pH**
  
- 5. What distinguishes a volumetric pipette from other types of pipettes?**
  - A. It can measure varying volumes**
  - B. It is highly accurate for fixed volumes**
  - C. It is made of plastic**
  - D. It has movable parts**

- 6. What is the primary function of pipet aids in the laboratory?**
- A. To hold pipets securely**
  - B. To dispense liquids precisely**
  - C. To simplify liquid transfer processes**
  - D. To store pipets efficiently**
- 7. Biotech primarily works with which of the following?**
- A. Small molecules**
  - B. DNA and proteins**
  - C. Organisms**
  - D. Chemical compounds**
- 8. What are lipids primarily used for in biological organisms?**
- A. Transporting nutrients**
  - B. Energy storage and cellular structure**
  - C. DNA storage**
  - D. Catalyzing reactions**
- 9. What is a primary responsibility of biotech engineers?**
- A. Conduct clinical trials**
  - B. Develop machinery for research**
  - C. Manage laboratory finances**
  - D. Perform data analysis**
- 10. Which agency is NOT involved in workplace regulations?**
- A. OSHA**
  - B. EPA**
  - C. FDA**
  - D. CDC**

## Answers

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

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## **Explanations**

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## 1. What are forceps mainly used for in a medical context?

- A. To mix ingredients
- B. To extract and handle objects**
- C. To measure liquids
- D. To deliver precise droplets

Forceps are primarily utilized in the medical field for extracting and handling objects. They are specialized tools designed to provide a strong grasp or hold on tissues, instruments, or other materials during surgical procedures or examinations. This function is particularly important in situations where precision and control are necessary, such as in delicate surgical operations, where the clinician needs to manipulate tissue carefully without causing damage. In contrast, tools designed for mixing ingredients or delivering precise droplets serve very different purposes. For example, mixing tools are typically used in laboratory settings or cooking, while devices that measure liquids are essential in scenarios requiring accurate volume measurements. Thus, the primary role of forceps as instruments for extraction and handling effectively distinguishes them from the other options presented.

## 2. What does ATP stand for in cellular biology?

- A. Adenosine triphosphate**
- B. Amino transfer protein
- C. Adrenaline transport peptide
- D. Aromatic transport protein

In cellular biology, ATP stands for adenosine triphosphate. This molecule is often referred to as the energy currency of the cell because it plays a crucial role in storing and transferring energy within cells. ATP consists of an adenosine molecule bonded to three phosphate groups. When the terminal phosphate bond is broken through hydrolysis, energy is released, which is then used to power various cellular processes, such as muscle contraction, protein synthesis, and cellular signaling. The significance of ATP extends to its role in metabolism, where it functions as a substrate in many biochemical reactions. It is also essential for maintaining cellular homeostasis, driving various transport mechanisms, and functioning in signaling pathways. Therefore, understanding ATP is fundamental to studying cellular and molecular biology, as it is integral to energy metabolism and cellular function.

**3. Which of the following best describes the role of lab technicians in biotechnology?**

- A. Conduct independent research**
- B. Operate machinery and collect data**
- C. Manage regulatory compliance**
- D. Design educational programs**

The role of lab technicians in biotechnology primarily involves operating machinery and collecting data. This position is crucial because technicians are often responsible for carrying out experiments, handling specialized equipment (such as pipettes, centrifuges, and automated analyzers), and ensuring that all experiments are conducted safely and accurately. By performing these tasks, lab technicians help maintain the workflow in research and development within a biotechnology setting, enabling scientists and researchers to focus on analyzing results and advancing their projects. In contrast, conducting independent research typically falls to scientists or researchers rather than technicians, as it involves hypothesis formulation, experimental design, and interpretation of results. Managing regulatory compliance is usually the responsibility of regulatory affairs specialists or quality assurance personnel, focusing on ensuring that all the work adheres to industry standards and regulations. Designing educational programs is more aligned with roles in education and outreach rather than the technical focus of a laboratory technician. Thus, the best description of a lab technician's role in biotechnology is accurately represented by the duty of operating machinery and collecting data.

**4. What are the three types of pipette pumps used for?**

- A. Measuring solids, filling liquids, transferring gases**
- B. Filling and delivering contents of vacuum-assisted pumps**
- C. Heating liquids, cooling solutions, mixing chemicals**
- D. Storing samples, transferring mediums, measuring pH**

Pipette pumps are essential tools in laboratory settings, particularly for accurately filling and delivering liquids. The correct response indicates that pipette pumps are used for filling and delivering contents of vacuum-assisted pumps, which helps in processes that require precise liquid handling. When using a pipette pump in conjunction with vacuum-assisted techniques, it enhances the accuracy and efficiency of transferring various volumes of liquid. This is particularly important in applications where precise measurements are crucial, such as in biochemical analysis, cell culture preparation, and various assays. Understanding the role of pipette pumps in filling and delivering liquids highlights their importance in experimental procedures, ensuring that lab technicians can maintain accuracy and prevent contamination. This capability is fundamental in many biological and chemical workflows, which rely on the consistent performance of pipette pumps to yield reliable results.

**5. What distinguishes a volumetric pipette from other types of pipettes?**

- A. It can measure varying volumes**
- B. It is highly accurate for fixed volumes**
- C. It is made of plastic**
- D. It has movable parts**

A volumetric pipette is specifically designed to deliver a single, fixed volume of liquid with high precision and accuracy. This unique characteristic makes it the preferred choice when a precise volume measurement is critical in laboratory settings. Unlike other types of pipettes, such as graduated pipettes that can measure varying volumes, a volumetric pipette is calibrated for only one specific volume, reducing potential errors in volume measurement. The design of a volumetric pipette allows for excellent performance in dispensing that specific volume, making it essential in quantitative analysis in biochemistry, chemistry, and molecular biology. The other options, while relevant to types of pipettes, do not accurately describe the defining feature of a volumetric pipette, which is its high accuracy for fixed volumes.

**6. What is the primary function of pipet aids in the laboratory?**

- A. To hold pipets securely**
- B. To dispense liquids precisely**
- C. To simplify liquid transfer processes**
- D. To store pipets efficiently**

The primary function of pipet aids is indeed to simplify liquid transfer processes. Pipet aids enhance the ease and accuracy of liquid handling in laboratory settings. They are designed to facilitate the controlled movement of liquids from one container to another, making the process quicker and more efficient. By using a pipet aid, a technician can aspirate and dispense liquids with minimal effort and increased precision, which is crucial in experiments requiring accurate measurements. While holding pipets securely and dispensing liquids precisely are important features of pipet aids, these functions are inherently part of the broader role of simplifying the liquid transfer process. Storing pipets efficiently is not a primary function of pipet aids but rather a separate consideration for laboratory organization. Overall, the design and purpose of pipet aids revolve around improving the fluid transfer process in the laboratory, which is why the chosen answer is accurate.

## 7. Biotech primarily works with which of the following?

- A. Small molecules
- B. DNA and proteins**
- C. Organisms
- D. Chemical compounds

Biotechnology primarily focuses on DNA and proteins because these molecules are fundamental to biological processes and are central to the manipulation and understanding of living organisms. DNA contains the genetic blueprint that dictates how organisms develop and function, while proteins play crucial roles in virtually every biological activity, including catalysis, structural support, and signaling. By working with DNA, biotechnologists can engage in genetic engineering, cloning, and the development of genetically modified organisms (GMOs), which are essential for advancements in medicine, agriculture, and research. Proteins are similarly crucial, as biotechnology often involves protein purification, characterization, and engineering for therapeutic purposes, such as designing medications or vaccines. While small molecules, organisms, and chemical compounds also play significant roles in various fields of science and industry, they do not encapsulate the primary focus of biotechnology as comprehensively as DNA and proteins do.

## 8. What are lipids primarily used for in biological organisms?

- A. Transporting nutrients
- B. Energy storage and cellular structure**
- C. DNA storage
- D. Catalyzing reactions

Lipids serve crucial roles in biological organisms, particularly in energy storage and forming cellular structures. The hydrophobic nature of lipids allows them to form membranes, such as the phospholipid bilayer that constitutes cell membranes. This structure is essential for maintaining cellular integrity and creating compartments within cells, facilitating different biochemical processes. In addition to their structural functions, lipids are a major source of energy. They provide more than double the energy per gram compared to carbohydrates and proteins, making them an efficient form of energy storage. When energy is needed, organisms can break down these stored lipids to release energy. While some other options hint at important biological functions, they do not capture the primary roles of lipids as accurately. For instance, transporting nutrients is mainly the role of proteins and certain carbohydrates. DNA storage is specific to nucleic acids, while catalyzing reactions predominantly involves enzymes (which are proteins). Hence, the primary functions of lipids are best captured by the energy storage and structural roles they play in cellular biology.

## 9. What is a primary responsibility of biotech engineers?

- A. Conduct clinical trials
- B. Develop machinery for research**
- C. Manage laboratory finances
- D. Perform data analysis

Biotech engineers play a crucial role in the development and optimization of tools and machinery that are essential for biotechnological research and applications. Their primary responsibility involves designing, constructing, and maintaining equipment used in various biological processes. This can include developing reactors for culturing cells, creating automated systems for sample processing, or engineering instrumentation to carry out experiments efficiently. The focus on creating machinery that aids research distinguishes the role of biotech engineers from other professionals in the biotechnological field. While conducting clinical trials, managing finances, and performing data analysis are important tasks within the broader scope of biotechnology, they typically fall under the responsibilities of clinical researchers, financial managers, or data analysts, rather than engineers. Thus, the development of machinery and tools directly aligns with the core competencies and contributions of biotech engineers.

## 10. Which agency is NOT involved in workplace regulations?

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

The correct answer is that the CDC is not involved in workplace regulations in the same way the other agencies are. The Centers for Disease Control and Prevention (CDC) primarily focuses on public health and safety, investigating health threats, and promoting health through various programs. While it does provide guidance on workplace health issues and infectious disease control (especially relevant during outbreaks), it does not directly regulate workplace environments. On the other hand, OSHA (Occupational Safety and Health Administration) is explicitly tasked with ensuring safe and healthful working conditions through the enforcement of standards and by providing training, outreach, education, and assistance. The EPA (Environmental Protection Agency) regulates environmental hazards that could affect workplaces, such as chemical exposure. The FDA (Food and Drug Administration) oversees the safety of food and drugs but also has roles that touch on occupational health, particularly in industries involving food production and pharmaceuticals. Therefore, while all four agencies address aspects of health and safety, the CDC's role does not primarily focus on enforcing workplace regulations, making it the correct choice in this context.

## 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](mailto: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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