

# Pima JTED Bioscience Practice Test (Sample)

## Study Guide



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

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**SAMPLE**

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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

- 1. What is the function of an anode in an electrophoresis box?**
  - A. It has a negative charge and attracts electrons**
  - B. It is a cell that produces oxygen**
  - C. It has a positive charge and is the source of electrons**
  - D. It splits molecules using electrical current**
- 2. What does the term 'genome' refer to in bioscience?**
  - A. All the proteins expressed by an organism**
  - B. The complete set of genetic material in an organism**
  - C. The collection of enzymes in a cell**
  - D. All metabolic pathways of an organism**
- 3. What is the primary function of a microscope slide?**
  - A. To enhance the color of the specimen**
  - B. To hold a microscope specimen**
  - C. To magnify the specimen image**
  - D. To cover the specimen for observation**
- 4. What does a pump do in a lab context?**
  - A. It measures the pressure of gases**
  - B. It draws up liquid into a serological pipet**
  - C. It transfers heat to a sample**
  - D. It measures small amounts of solid substances**
- 5. What is the main function of ligase in DNA replication?**
  - A. To add complementary bases**
  - B. To elongate the DNA strands**
  - C. To repair nicks on the lagging strand**
  - D. To break hydrogen bonds**
- 6. What does % M/V (percent mass volume) indicate?**
  - A. A concentration expressed in grams per liter**
  - B. A concentration where the amount of mass is expressed as a percent of the total volume**
  - C. A concentration that describes the volume of a gas**
  - D. A concentration based on temperature changes**

- 7. What is the goal of implementing quality control?**
- A. To enhance production speed**
  - B. To reduce operational costs**
  - C. To ensure products meet set expectations**
  - D. To maximize market share**
- 8. Why is it important to use a fixative in staining procedures?**
- A. To cool the sample**
  - B. To adhere the stain to the organism**
  - C. To increase visibility of the sample**
  - D. To enhance the pH of the solution**
- 9. What does the 2nd stop of a micropipette accomplish?**
- A. The function of filling the liquid into the pipette**
  - B. The release of the liquid contained in the tip**
  - C. The adjustment of the micropipette volume**
  - D. The sealing of the pipette tip**
- 10. What technique is used to measure the concentration of bacteria in a liquid culture?**
- A. Agar plate counting**
  - B. OD600 using a spectrophotometer**
  - C. Streaking method**
  - D. Inoculation of solid growth media**



## **Answers**

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

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## **Explanations**

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**1. What is the function of an anode in an electrophoresis box?**

- A. It has a negative charge and attracts electrons**
- B. It is a cell that produces oxygen**
- C. It has a positive charge and is the source of electrons**
- D. It splits molecules using electrical current**

The function of an anode in an electrophoresis box is to provide a positive charge, which attracts negatively charged particles, such as DNA or RNA molecules. During the electrophoresis process, when an electric field is applied, these negatively charged particles migrate towards the anode because opposites attract. Thus, the anode plays a crucial role in facilitating the movement of the molecules through the gel medium, allowing for their separation based on size and charge. The anode being a source of positive charge is key to the functioning of electrophoresis, as it influences the direction that negatively charged substances will travel, ensuring that the separation process occurs effectively. This understanding is fundamental in various applications, including DNA analysis and protein separation.

**2. What does the term 'genome' refer to in bioscience?**

- A. All the proteins expressed by an organism**
- B. The complete set of genetic material in an organism**
- C. The collection of enzymes in a cell**
- D. All metabolic pathways of an organism**

The term 'genome' specifically refers to the complete set of genetic material present in an organism, which includes both the genes and the non-coding sequences of DNA. This encompasses all the hereditary information that can influence the development, functioning, and reproduction of the organism. The genome is crucial because it serves as a blueprint for the biological development and functioning of that organism. In contrast, the other options are more limited in scope. For instance, focusing solely on proteins would only represent a portion of the genome's functionality; proteins are products of genes that are expressed under specific conditions, but they do not encompass the entire genetic information. The collection of enzymes or metabolic pathways pertains to specific biochemical processes and functions but does not capture the full range of genetic material that constitutes the genome. Thus, defining the genome as the complete set of genetic material provides a comprehensive understanding of an organism's biological identity.

### 3. What is the primary function of a microscope slide?

- A. To enhance the color of the specimen
- B. To hold a microscope specimen**
- C. To magnify the specimen image
- D. To cover the specimen for observation

The primary function of a microscope slide is to hold a microscope specimen. A microscope slide provides a stable and flat platform for placing specimens so they can be easily observed under a microscope. This is crucial for the analysis and study of small objects or biological samples, as it ensures that the specimen remains in place and is positioned correctly for viewing. While covering the specimen for observation is also important, as it helps to protect the sample and keep it in view, the fundamental purpose is to hold the specimen securely. The slide itself does not magnify or enhance the colors but allows the microscope to do its job effectively by presenting the specimen in an appropriate way. Therefore, the correct focus on the slide's role as a holder aligns with its essential function in microscopy.

### 4. What does a pump do in a lab context?

- A. It measures the pressure of gases
- B. It draws up liquid into a serological pipet**
- C. It transfers heat to a sample
- D. It measures small amounts of solid substances

In a laboratory context, a pump is primarily used to manipulate liquids, and one of its common functions is to draw up liquid into a serological pipet. This device facilitates the accurate transfer of liquids, often characterized by its use in techniques requiring precision and control over liquid handling. Serological pipets are typically used for transferring and measuring liquids in biological experiments and applications, so the ability of a pump to efficiently and accurately fill these pipets is instrumental in ensuring experimental consistency and reliability. Pumps are designed to create suction that helps in drawing liquid from one container and into another, such as a pipet, allowing for precise measurements and sample preparation. In contrast, the other options relate to functions that are not performed by a pump in a lab setting. For example, measuring pressure, transferring heat, and measuring solids are tasks that involve different instruments or equipment tailored for those specific purposes. Therefore, the function of a pump in drawing liquid into a serological pipet is crucial for many laboratory procedures that rely on liquid handling.

**5. What is the main function of ligase in DNA replication?**

- A. To add complementary bases
- B. To elongate the DNA strands
- C. To repair nicks on the lagging strand**
- D. To break hydrogen bonds

The primary function of ligase in DNA replication is to repair nicks on the lagging strand. During replication, DNA is synthesized in short segments known as Okazaki fragments on the lagging strand. Once these segments are formed, ligase comes into play to join these fragments together, sealing the gaps between them to create a continuous DNA strand. This is crucial for maintaining the integrity and stability of the DNA molecule during and after the replication process. While other enzymes and processes are involved in adding complementary bases, elongating DNA strands, and breaking hydrogen bonds between the DNA strands, ligase specifically addresses the nicks and gaps that arise in the lagging strand, ensuring that the final replicated DNA molecule is complete and properly structured. This process is essential for accurate DNA replication and is a foundational aspect of molecular biology.

**6. What does % M/V (percent mass volume) indicate?**

- A. A concentration expressed in grams per liter
- B. A concentration where the amount of mass is expressed as a percent of the total volume**
- C. A concentration that describes the volume of a gas
- D. A concentration based on temperature changes

The correct answer highlights that % M/V (percent mass/volume) is a way to express concentration, specifically indicating how much mass of a solute is contained in a certain volume of solution. This means that % M/V is calculated by taking the mass of the solute in grams, dividing it by the total volume of the solution in milliliters, and then multiplying by 100 to express it as a percentage. For instance, a 5% M/V solution means there are 5 grams of solute in every 100 milliliters of solution. This measurement is particularly useful in fields such as biochemistry and pharmacology, where precise concentrations of solutions are crucial for reactions and treatments. The other options do not accurately describe how % M/V is defined or calculated, emphasizing why this selection is the most appropriate in the context of understanding solution concentrations.

## 7. What is the goal of implementing quality control?

- A. To enhance production speed
- B. To reduce operational costs
- C. To ensure products meet set expectations**
- D. To maximize market share

The goal of implementing quality control is primarily to ensure that products meet set expectations. Quality control involves systematic processes designed to check the quality of products at various stages of production. This includes monitoring and testing materials, components, and final products to ensure they align with established standards and specifications. When quality control is effectively applied, it helps in maintaining consistency and reliability in the products offered, ultimately leading to increased customer satisfaction and trust. While enhancing production speed, reducing operational costs, and maximizing market share are all important aspects of a business's strategic goals, they are not the foundational purpose of quality control. Instead, quality control serves as a mechanism to uphold the integrity and performance of products, thereby indirectly contributing to improved operational efficiency and market success as a result of high-quality offerings.

## 8. Why is it important to use a fixative in staining procedures?

- A. To cool the sample
- B. To adhere the stain to the organism**
- C. To increase visibility of the sample
- D. To enhance the pH of the solution

Using a fixative in staining procedures is crucial because it helps to preserve the structure of the specimen, making it possible for the stain to adhere properly to the organism. Fixatives work by cross-linking proteins and stabilizing cell membranes, which prevents the degradation of cellular components. This stabilization allows for clear and consistent staining, as the stain can bind effectively to the cellular structures without the risk of them disintegrating during the staining process. This adherence is essential for accurate visualization under a microscope, as it ensures that the target structures are highlighted properly and remain intact during the preparation and observation stages.

## 9. What does the 2nd stop of a micropipette accomplish?

- A. The function of filling the liquid into the pipette
- B. The release of the liquid contained in the tip**
- C. The adjustment of the micropipette volume
- D. The sealing of the pipette tip

The function of the second stop on a micropipette is to release the liquid contained in the tip. When aspirating a liquid, the first stop is used to draw the liquid into the pipette, and during the dispensing process, the second stop ensures that all the liquid is accurately released from the tip. This mechanism is crucial for precision in laboratory settings, as it allows the user to expel the exact volume of liquid required without leaving residual liquid in the tip. This accuracy is vital for experiments where precise measurements of reagents are necessary, emphasizing why understanding the function of the second stop is important in pipetting techniques.

**10. What technique is used to measure the concentration of bacteria in a liquid culture?**

**A. Agar plate counting**

**B. OD600 using a spectrophotometer**

**C. Streaking method**

**D. Inoculation of solid growth media**

Using OD600 with a spectrophotometer is a widely accepted technique for measuring the concentration of bacteria in a liquid culture. This method involves measuring the optical density (OD) of the culture at a wavelength of 600 nanometers. At this wavelength, the turbidity caused by the bacteria in the liquid culture is quantified, allowing researchers to estimate the number of cells present. As the concentration of bacteria increases, the culture becomes more turbid and absorbs more of the light passing through it. By comparing the OD600 readings to a standard curve, which relates optical density to cell concentration, one can quickly assess and monitor bacterial growth over time. This technique is rapid, non-destructive, and allows for real-time tracking of bacterial growth, making it a preferred method in many microbiological applications. In contrast, other techniques listed, such as agar plate counting, the streaking method, and inoculation of solid growth media, are primarily used for isolating bacteria, assessing their viability, or culturing them to study specific characteristics, rather than directly measuring concentration in a liquid medium.



## 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://pimajtedbioscience.examzify.com>**

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