

Pima JTED Bioscience Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

This is a sample study guide. To access the full version with hundreds of questions,

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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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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!

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Questions

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- 1. What is the purpose of a hot plate/stirrer?**
 - A. To heat solutions to boiling point**
 - B. To manually mix solutions only**
 - C. To heat, stir, or do both simultaneously**
 - D. To cool reactions quickly**

- 2. Why is the BLAST tool significant in genomics?**
 - A. It helps to detect gene mutations easily**
 - B. It allows for the comparison of sequences for evolutionary studies**
 - C. It provides a platform for medical diagnostics**
 - D. It is used primarily for lab bench experiments**

- 3. Which aspect of quality management focuses on testing the final product?**
 - A. Risk management**
 - B. Trend analysis**
 - C. Quality control**
 - D. Quality assurance**

- 4. What is the range in the context of a set of values?**
 - A. The average value of the set**
 - B. The middle value of the set**
 - C. The highest value minus the lowest value**
 - D. The most frequently occurring value**

- 5. What is a glycerol stock used for in microbiology?**
 - A. To create living cultures for experiments**
 - B. To mix with liquid cultures for long-term storage**
 - C. To measure bacterial concentrations accurately**
 - D. To perform inoculation processes**

6. How is quality assurance best defined?

- A. Maintaining the quality of a product by examining the manufacturing process over extended amounts of time**
- B. Enforcing strict regulations on product safety**
- C. Improving marketing techniques for products**
- D. Establishing customer feedback systems**

7. What term describes a substance that is repelled by water?

- A. Hydrophilic**
- B. Hydrophobic**
- C. Amphipathic**
- D. Polar**

8. What does the "copy number" aspect of "copy number variant" imply?

- A. It refers to gene position on chromosomes**
- B. It indicates the variable copies of a gene across individuals**
- C. It denotes chromosome alignment during cell division**
- D. It measures nucleotide sequence errors during synthesis**

9. What is the role of a control in an experiment?

- A. A random factor in an experiment**
- B. A predetermined consistency throughout an experiment**
- C. A variable that is inconsistently measured**
- D. A measurement taken after the experiment**

10. Which type of DNA is referred to as genomic DNA?

- A. DNA that includes plasmids**
- B. Only mitochondrial DNA found in organisms**
- C. Chromosomal DNA that makes up an organism's genome**
- D. DNA used exclusively in cloning**

Answers

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

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Explanations

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1. What is the purpose of a hot plate/stirrer?

- A. To heat solutions to boiling point
- B. To manually mix solutions only
- C. To heat, stir, or do both simultaneously**
- D. To cool reactions quickly

The purpose of a hot plate/stirrer is to provide both heating and stirring capabilities, allowing for efficient mixing of solutions while applying heat. This dual functionality is essential in many laboratory experiments where maintaining a specific temperature while ensuring proper mixing of reactants is critical for achieving desired results. By heating solutions, the hot plate facilitates reactions that may require elevated temperatures, promoting faster reaction rates or ensuring that solutes dissolve adequately. Simultaneously, the stirring feature helps in achieving uniformity in the mixture, preventing localized overheating or uneven concentrations, which can lead to erroneous outcomes in experimental results. Some alternatives may emphasize only heating or manual mixing, but the hot plate/stirrer's integrated design allows users to perform both tasks seamlessly, making it a versatile tool in a laboratory setting.

2. Why is the BLAST tool significant in genomics?

- A. It helps to detect gene mutations easily
- B. It allows for the comparison of sequences for evolutionary studies**
- C. It provides a platform for medical diagnostics
- D. It is used primarily for lab bench experiments

The BLAST (Basic Local Alignment Search Tool) is a critical resource in genomics primarily because it enables the comparison of biological sequences, which is essential for evolutionary studies. By allowing researchers to align sequences from different organisms or genes, BLAST helps identify similarities and differences, shedding light on evolutionary relationships and lineage history. This capability is fundamental in understanding how species have evolved over time, informing phylogenetic studies, and enhancing our knowledge of genetic diversity. While detecting gene mutations, supporting medical diagnostics, and lab bench experiments are important aspects of genomic research and applications, they do not encapsulate the primary purpose of BLAST. Its main strength lies in facilitating the analysis of sequence data to uncover insights about evolutionary biology.

3. Which aspect of quality management focuses on testing the final product?

- A. Risk management**
- B. Trend analysis**
- C. Quality control**
- D. Quality assurance**

The correct answer is quality control, which focuses specifically on the process of testing and evaluating the final product to ensure it meets the required standards and specifications. This aspect of quality management involves various inspection and testing techniques to identify defects or issues in the product before it is released to the market or delivered to the customer. The primary goal of quality control is to ensure that the final output is of high quality and satisfies customer expectations, thereby preventing any potential problems that could arise from a subpar product. In contrast, risk management involves identifying and mitigating risks that could impact a project or product but does not focus on the testing of the final product itself. Trend analysis is a method used to identify patterns over time in data, which can help in making strategic decisions, but it does not directly pertain to the final product's testing. Quality assurance, while closely related, is more about the processes and systems that ensure the quality standards are established and maintained throughout production, rather than testing the finished items directly. Quality control, therefore, is the specific aspect of quality management that deals with the evaluation of the final product to ensure it meets set criteria.

4. What is the range in the context of a set of values?

- A. The average value of the set**
- B. The middle value of the set**
- C. The highest value minus the lowest value**
- D. The most frequently occurring value**

In statistical terms, the range is a measure of the spread or dispersion of a set of values. Specifically, it is calculated by subtracting the smallest value in the set from the largest value. This calculation provides a simple way to understand how much variability exists within the dataset. For instance, if you have a set of values such as 2, 5, 7, and 10, the range would be determined by taking the highest value (10) and subtracting the lowest value (2), resulting in a range of 8. This allows you to see the distance between the extreme values in the dataset, giving insights into its distribution. The other choices represent different statistical concepts but do not reflect the definition of range accurately. The average value refers to the mean, the middle value refers to the median, and the most frequently occurring value is known as the mode. Each of these measures provides different insights into the data, but they do not capture the concept of range, which specifically deals with the extremes of the values.

5. What is a glycerol stock used for in microbiology?

- A. To create living cultures for experiments
- B. To mix with liquid cultures for long-term storage**
- C. To measure bacterial concentrations accurately
- D. To perform inoculation processes

A glycerol stock is a method used in microbiology to preserve bacterial cultures for long-term storage. By mixing bacterial cells with glycerol and freezing the solution, researchers can protect the cells from damage caused by ice crystal formation during the freezing process. Glycerol acts as a cryoprotectant, allowing the cells to survive the freeze-thaw cycles and maintain their viability over extended periods, often years.

Choosing the option that states glycerol is mixed with liquid cultures for long-term storage accurately describes the primary purpose of glycerol stocks. This method ensures that researchers can easily revive and use the cultures in future experiments without having to repeatedly grow new cultures from the original source, thus saving time and resources while maintaining strain integrity. The other choices focus on different aspects of microbiological practices—creating living cultures, measuring bacterial concentrations, and performing inoculations—none of which specifically highlight the preservation function offered by glycerol stocks.

6. How is quality assurance best defined?

- A. Maintaining the quality of a product by examining the manufacturing process over extended amounts of time**
- B. Enforcing strict regulations on product safety
- C. Improving marketing techniques for products
- D. Establishing customer feedback systems

Quality assurance is best defined as maintaining the quality of a product by examining the manufacturing process over extended amounts of time. This definition emphasizes the systematic and ongoing processes that organizations put in place to ensure that their products meet specific quality standards consistently. It involves monitoring production processes, identifying areas for improvement, and implementing procedures to enhance overall product quality. This approach is proactive and aims to prevent defects or issues before they occur in the final product, distinguishing it from other practices that may focus solely on product safety, marketing improvements, or customer feedback systems. While these other aspects may contribute to an overall quality framework, they do not encapsulate the continuous and integrative nature of quality assurance in evaluating and enhancing manufacturing processes directly.

7. What term describes a substance that is repelled by water?

- A. Hydrophilic
- B. Hydrophobic**
- C. Amphipathic
- D. Polar

The term that describes a substance that is repelled by water is "hydrophobic." Hydrophobic substances are typically nonpolar, meaning they do not interact favorably with polar molecules like water. This results in a tendency for hydrophobic substances to avoid contact with water, often leading to behaviors such as clustering together in an aqueous environment. In this context, hydrophilic substances, in contrast, are attracted to water and readily dissolve in it, making them water-loving. Amphipathic molecules possess both hydrophobic and hydrophilic portions, which allows them to interact with both water and lipids. Polar refers specifically to molecules that have a distribution of electrical charge that leads to partial positive and negative regions, influencing their interactions with water. Thus, "hydrophobic" is the precise term for substances that resist interaction with water.

8. What does the "copy number" aspect of "copy number variant" imply?

- A. It refers to gene position on chromosomes
- B. It indicates the variable copies of a gene across individuals**
- C. It denotes chromosome alignment during cell division
- D. It measures nucleotide sequence errors during synthesis

The concept of "copy number" in the term "copy number variant" (CNV) specifically refers to the variation in the number of copies of a particular gene or genomic region that an individual may possess compared to others. This means that some individuals may have multiple copies of the same gene, while others may have fewer or even none. These variations can arise due to structural changes in the genome, such as duplications or deletions of segments of DNA. Understanding copy number variants is important in genetics and genomics because they can have significant implications for gene dosage effects and the phenotypic expression of traits, including susceptibility to diseases. Variations in gene copy numbers can affect biochemical pathways and cellular functions, leading to diverse biological outcomes among individuals. In contrast, the other choices discuss unrelated aspects of genetics. The position of genes on chromosomes pertains to chromosomal mapping rather than copy number. Chromosome alignment relates to processes involved in cell division rather than variations in gene copies. Nucleotide sequence errors during synthesis focus on the fidelity of DNA replication and not on the variations in the number of gene copies. Therefore, the selection that emphasizes the variable copies of a gene across individuals captures the essence of what copy number means in the context of genetics.

9. What is the role of a control in an experiment?

- A. A random factor in an experiment
- B. A predetermined consistency throughout an experiment**
- C. A variable that is inconsistently measured
- D. A measurement taken after the experiment

The role of a control in an experiment is to provide a predetermined consistency throughout the study. Controls are essential for establishing a baseline against which the effects of the experimental variable can be measured. They help ensure that the results are due to the manipulation of the independent variable and not other factors. By keeping certain conditions constant, the experimenter can isolate the effects of the variable being tested. This consistency allows researchers to make valid conclusions about the relationship between the independent and dependent variables. In scientific research, the use of controls helps to improve the reliability and validity of the results. In contrast, a random factor in an experiment, inconsistently measured variables, and measurements taken after the experiment do not serve the foundational purpose of a control, which is to maintain stability and comparability during the experimental process.

10. Which type of DNA is referred to as genomic DNA?

- A. DNA that includes plasmids
- B. Only mitochondrial DNA found in organisms
- C. Chromosomal DNA that makes up an organism's genome**
- D. DNA used exclusively in cloning

Genomic DNA refers specifically to the chromosomal DNA that constitutes the complete set of genetic material in an organism. This includes all the genes and regulatory elements necessary for the growth, development, and functioning of that organism. Genomic DNA is organized within the chromosomes located in the nucleus of eukaryotic cells, and it represents the entirety of an organism's inherited genetic information. The other options do not adequately describe genomic DNA. For instance, while plasmids are small circular DNA molecules found in some organisms like bacteria, they are considered extrachromosomal and do not form part of the organism's main genomic DNA. Mitochondrial DNA, while important for cellular functions, is a separate entity and does not encompass the entire genomic representation of an organism. Lastly, DNA used exclusively in cloning might refer to various types of DNA and does not align with the definition of genomic DNA, which specifically indicates the chromosomal DNA that makes up the complete genome. Thus, the correct answer highlights the fundamental component of an organism's genetic architecture.

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://pimajtedbioscience.examzify.com>

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

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