

Praxis II Biology (5235) 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. How does magnesium contribute to plant health?**
 - A. By facilitating enzyme reactions in photosynthesis**
 - B. By improving water retention in soil**
 - C. By promoting nutrient absorption**
 - D. By serving as a building block for proteins**

- 2. What is a frame-shift mutation?**
 - A. A mutation that occurs in coding regions only**
 - B. A genetic mutation that changes the sequence of amino acids**
 - C. A mutation caused by the deletion or addition of nucleotides**
 - D. A mutation that occurs without affecting protein translation**

- 3. Microfilaments are primarily involved in which cellular functions?**
 - A. Protein synthesis and energy production**
 - B. Cellular structure, shape, and movement**
 - C. Transport of small molecules across membranes**
 - D. Enzymatic reactions within the cell**

- 4. What are plasmodesmata?**
 - A. Tubes that transfer nutrients between different plant species**
 - B. Structures that allow plant cells to share water**
 - C. Tubes that transfer C-4 molecules into bundle sheath cells**
 - D. Channels that facilitate gas exchange in roots**

- 5. What key event occurs during prophase of cell division?**
 - A. Nuclear envelope dissolves**
 - B. Chromosomes line up at the center**
 - C. Cell membrane forms**
 - D. DNA replicates**

- 6. What is the pericardium?**
 - A. A muscle that contracts the heart**
 - B. A chamber in the heart**
 - C. A fluid-filled sac surrounding the heart**
 - D. A type of blood vessel**

- 7. How does the nucleus influence the production of hormones and enzymes?**
- A. By storing them until needed**
 - B. By monitoring changes and directing synthesis**
 - C. By excreting them via exocytosis**
 - D. By breaking them down for recycling**
- 8. How can translocation be both beneficial and harmful?**
- A. It is always harmful to the organism**
 - B. It can lead to phenotypically normal individuals carrying genetic diseases**
 - C. It never results in antibiotic resistance**
 - D. It always results in cancer**
- 9. In what stage do the chromosomes condense and become visible?**
- A. Telophase**
 - B. Prophase**
 - C. Anaphase**
 - D. Interphase**
- 10. In protein synthesis, what is the role of mRNA?**
- A. It carries the genetic information from the nucleus to the ribosome**
 - B. It synthesizes proteins directly**
 - C. It transports proteins to the Golgi apparatus**
 - D. It degrades amino acids**

Answers

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

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Explanations

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1. How does magnesium contribute to plant health?

- A. By facilitating enzyme reactions in photosynthesis**
- B. By improving water retention in soil**
- C. By promoting nutrient absorption**
- D. By serving as a building block for proteins**

Magnesium plays a crucial role in plant health primarily by facilitating enzyme reactions that are essential for photosynthesis. Within the chlorophyll molecule, magnesium acts as a central component, enabling plants to capture light energy effectively during photosynthesis. This process is vital for converting carbon dioxide and water into glucose and oxygen, which are foundational for plant growth and energy production. The presence of magnesium also enhances the activity of various enzymes involved in the biochemical pathways of carbohydrate metabolism and synthesis. Consequently, without sufficient magnesium, plants can experience stunted growth and reduced photosynthetic efficiency, leading to lower yields and poorer overall health. While magnesium does have roles that might relate to nutrient absorption or soil properties indirectly, its direct contribution to facilitating essential biochemical reactions in photosynthesis is a primary reason for its importance in plant health.

2. What is a frame-shift mutation?

- A. A mutation that occurs in coding regions only**
- B. A genetic mutation that changes the sequence of amino acids**
- C. A mutation caused by the deletion or addition of nucleotides**
- D. A mutation that occurs without affecting protein translation**

A frame-shift mutation results from the deletion or addition of nucleotides in a DNA sequence, which alters the reading frame of the genetic code. This shift changes how the remaining nucleotides are grouped into codons, the basic units of the genetic code that correspond to specific amino acids. As a result, the entire sequence of amino acids downstream of the mutation can be altered, which can have significant effects on the structure and function of the resulting protein. This is why it is crucial to understand frame-shift mutations; they can lead to substantial changes in protein functionality, potentially resulting in diseases or malfunctions within an organism. The other explanations provided do not encapsulate the concept of a frame-shift mutation accurately. A frame-shift mutation is not confined to coding regions only; it can occur in any sequence of DNA. Moreover, while it changes the sequence of amino acids, the specific mechanism of a frame-shift mutation involves the addition or deletion of nucleotides, distinguishing it from other mutation types. Additionally, a frame-shift mutation does affect protein translation by altering the amino acid sequence, rather than being a silent mutation that occurs without affecting it.

3. Microfilaments are primarily involved in which cellular functions?

- A. Protein synthesis and energy production
- B. Cellular structure, shape, and movement**
- C. Transport of small molecules across membranes
- D. Enzymatic reactions within the cell

Microfilaments are a key component of the cytoskeleton in eukaryotic cells, primarily composed of actin filaments. Their role is crucial in maintaining cellular structure and shape, providing mechanical support to the cell. This allows cells to retain their integrity and resist deformation under various conditions. In addition to structural support, microfilaments play a vital role in cell movement. They are involved in processes such as cytokinesis, where they help in the division of the cytoplasm during cell division, and in amoeboid movement, which is observed in certain types of cells such as macrophages. Microfilaments also contribute to the formation of cellular extensions like microvilli and lamellipodia, enabling motility and interaction with the environment. Thus, the correct answer highlights the essential functions of microfilaments in maintaining the shape of the cell and facilitating movement, which are fundamental to various cellular processes and overall cell behavior.

4. What are plasmodesmata?

- A. Tubes that transfer nutrients between different plant species
- B. Structures that allow plant cells to share water
- C. Tubes that transfer C-4 molecules into bundle sheath cells**
- D. Channels that facilitate gas exchange in roots

Plasmodesmata are specialized structures found in plant cells that serve as channels allowing for communication and transport between adjacent cells. They are not limited to transferring C-4 molecules or any specific type of molecule but instead enable the movement of various substances, such as proteins, lipids, and signaling molecules, across the cell walls. This intercellular connectivity is crucial for coordinated responses and resource sharing within plant tissues. In the context of the options presented, the answer should focus on the general function of plasmodesmata as channels facilitating communication and not exclusively on C-4 pathways. The other options reference processes or structures that do not accurately capture the primary role of plasmodesmata in plant biology. For instance, the idea that they transfer nutrients between different plant species misrepresents their function, which is confined to intercellular communication within the same plant organism. The other descriptions related to water sharing and gas exchange also do not align with the specific role of plasmodesmata.

5. What key event occurs during prophase of cell division?

- A. Nuclear envelope dissolves**
- B. Chromosomes line up at the center**
- C. Cell membrane forms**
- D. DNA replicates**

During prophase of cell division, the key event is the dissolution of the nuclear envelope. This process is crucial as it marks the transition from the interphase, where the cell prepares for division, to the actual mitotic phase. As prophase progresses, chromatin condenses into visible chromosomes which consist of two sister chromatids. The nucleolus also fades, and the mitotic spindle begins to form from microtubules. The breakdown of the nuclear envelope allows the spindle fibers to interact with the chromosomes, facilitating their movement to opposite poles of the cell in subsequent stages of mitosis. This is essential for the proper segregation of genetic material, ensuring that each daughter cell receives an identical set of chromosomes when the cell divides. The other events mentioned, such as the alignment of chromosomes at the center, formation of the cell membrane, and DNA replication, occur at different stages in the cell cycle. Chromosomes line up at the cell equator during metaphase, a new cell membrane forms during cytokinesis, and DNA replication occurs during the S phase of interphase before mitosis begins.

6. What is the pericardium?

- A. A muscle that contracts the heart**
- B. A chamber in the heart**
- C. A fluid-filled sac surrounding the heart**
- D. A type of blood vessel**

The pericardium is indeed a fluid-filled sac surrounding the heart. This double-walled structure serves several important functions. It provides a protective barrier for the heart, reducing the risk of trauma, and it also contains a small amount of fluid that lubricates the heart, allowing it to move more freely as it beats. Additionally, the pericardium helps to anchor the heart within the thoracic cavity while allowing for some movement as the heart expands and contracts. Understanding the pericardium's role is essential in recognizing how it maintains heart health and function, distinguishing it from other components of the cardiovascular system, such as muscles, chambers, or blood vessels.

7. How does the nucleus influence the production of hormones and enzymes?

- A. By storing them until needed**
- B. By monitoring changes and directing synthesis**
- C. By excreting them via exocytosis**
- D. By breaking them down for recycling**

The nucleus plays a crucial role in the production of hormones and enzymes primarily through its function as the control center for cellular activities. It houses the cell's genetic material in the form of DNA, which contains the instructions for synthesizing proteins, including hormones and enzymes. When a specific hormone or enzyme is needed, the relevant gene in the DNA is transcribed into messenger RNA (mRNA). This mRNA then exits the nucleus and is translated into a protein at the ribosomes in the cytoplasm. The nucleus, therefore, influences the production process by monitoring changes in the cellular environment—such as signals from other cells—and directing the synthesis of specific proteins based on these inputs. This regulatory capability ensures that the proper hormones and enzymes are produced in response to the body's needs.

8. How can translocation be both beneficial and harmful?

- A. It is always harmful to the organism**
- B. It can lead to phenotypically normal individuals carrying genetic diseases**
- C. It never results in antibiotic resistance**
- D. It always results in cancer**

Translocation refers to the movement of genetic material between different chromosomes or within the same chromosome. This process can have varying effects on an organism, and option B highlights a significant aspect of this duality. Translocations can be beneficial in some contexts, such as when they lead to advantageous genetic variations that contribute to evolutionary adaptation. However, they can also be detrimental, particularly when they result in gene rearrangements that cause mutations. One such outcome is the formation of phenotypically normal individuals who may carry genetic diseases; these individuals can appear healthy but have a genetic predisposition to certain disorders. This hidden carrier state is critical in the study of genetics, as it can complicate the understanding of disease inheritance and manifestation within populations. In contrast to the other options, which present absolute or incorrect statements about translocations, the nature of genetic translocations is inherently complex and can lead to a spectrum of outcomes, making option B the most accurate reflection of this complexity.

9. In what stage do the chromosomes condense and become visible?

- A. Telophase**
- B. Prophase**
- C. Anaphase**
- D. Interphase**

During prophase, the chromosomes undergo a significant transformation, which is crucial for cell division. At this stage, the chromatin, which is the loose, uncoiled form of DNA found in the nucleus, begins to condense into distinct, tightly packed structures known as chromosomes. This condensation is essential as it makes the chromosomes visible under a light microscope, allowing for easier identification and separation of the genetic material during the later stages of cell division. Moreover, during prophase, the nuclear envelope starts to break down, and the mitotic spindle begins to form, moving towards the poles of the cell. This prepares the cell for the subsequent stages of mitosis, where the separated chromatids will be pulled apart. The visibility of chromosomes at prophase is key to ensuring that each daughter cell receives the correct number of chromosomes after division. The other stages listed do not align with this process: in telophase, the chromosomes begin to de-condense and are no longer visible as distinct structures; in anaphase, the chromatids are still attached but are moving apart; and during interphase, the genetic material is in an uncondensed form and not visible as individual chromosomes. Thus, prophase is the stage where chromosomes condense and become distinctly

10. In protein synthesis, what is the role of mRNA?

- A. It carries the genetic information from the nucleus to the ribosome**
- B. It synthesizes proteins directly**
- C. It transports proteins to the Golgi apparatus**
- D. It degrades amino acids**

The role of mRNA (messenger RNA) in protein synthesis is pivotal as it carries the genetic information from the DNA in the nucleus to the ribosomes, which are the sites of protein synthesis in the cell. During transcription, the DNA sequence of a gene is transcribed into mRNA, which then exits the nucleus through the nuclear pores. This process ensures that the information encoded in the DNA is converted into a form that can be translated into a specific amino acid sequence, ultimately forming proteins. Once the mRNA reaches the ribosome, it serves as a template for translation, where the ribosome reads the sequence of codons on the mRNA and translates it into a chain of amino acids, forming proteins. This transport of genetic information is essential for the expression of genes and is a critical step in the pathway from genotype to phenotype in biological systems.

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://praxis2biology5235.examzify.com>

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