

Praxis II Science (7814) Practice Exam (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. 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. When an object is moving slowly, how does it relate to its stored energy?**
 - A. It has minimal energy**
 - B. It has no energy**
 - C. Energy is constant regardless of speed**
 - D. It has considerable energy**

- 2. What process allows ecosystems to maintain stability amidst environmental changes?**
 - A. Isolation of species**
 - B. Genetic mutation**
 - C. Adaptation and migration of species**
 - D. Permanent environmental alteration**

- 3. What does the term 'weather' refer to?**
 - A. The average temperature over years**
 - B. The condition of Earth's atmosphere at a particular time and place**
 - C. Seasonal changes in temperature**
 - D. The climatic changes over decades**

- 4. What is the result of hormonal secretion by endocrine glands?**
 - A. Direct communication with nearby cells**
 - B. Regulation of various bodily functions**
 - C. Promotion of cell division**
 - D. Enhancing neural signaling**

- 5. Which process primarily occurs in the mitochondria?**
 - A. Photosynthesis**
 - B. Translation of RNA**
 - C. Cellular respiration**
 - D. DNA transcription**

- 6. What is the primary greenhouse gas emitted by human activities?**
- A. Methane**
 - B. Nitrous oxide**
 - C. Carbon dioxide (CO₂)**
 - D. Ozone**
- 7. What term refers to the transfer of energy from one object to another, typically experienced as heat?**
- A. Energy conservation**
 - B. Energy transfer**
 - C. Energy transformation**
 - D. Energy depletion**
- 8. Which process is NOT associated with the breaking down of materials on Earth?**
- A. Weathering**
 - B. Glaciation**
 - C. Reforestation**
 - D. Erosion**
- 9. What is the primary function of ribosomes in a cell?**
- A. To synthesize proteins**
 - B. To replicate DNA**
 - C. To produce energy**
 - D. To transport substances**
- 10. In genetics, what is a locus?**
- A. A physical location of a gene on a chromosome**
 - B. A type of protein**
 - C. A technique for genetic analysis**
 - D. A mutation in the gene sequence**

Answers

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

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Explanations

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1. When an object is moving slowly, how does it relate to its stored energy?

- A. It has minimal energy**
- B. It has no energy**
- C. Energy is constant regardless of speed**
- D. It has considerable energy**

When an object is moving slowly, it relates to its stored energy in a specific way. The kinetic energy of an object, which is the energy it possesses due to its motion, is calculated using the formula $KE = \frac{1}{2}mv^2$, where m is the mass of the object and v is its velocity. Since the velocity is squared in the formula, a slow-moving object has a significantly lower kinetic energy compared to an object moving at a higher speed. While the object may still possess some energy, its kinetic energy is low due to the low velocity. Therefore, it can be said that when the object is moving slowly, it has minimal kinetic energy compared to a faster-moving object, indicating that its overall energy is comparatively low in terms of motion. Additionally, while other forms of stored energy, like potential energy, may be present, the focus here is on how the slow speed translates into kinetic energy. Hence, minimal energy is an appropriate conclusion in this context.

2. What process allows ecosystems to maintain stability amidst environmental changes?

- A. Isolation of species**
- B. Genetic mutation**
- C. Adaptation and migration of species**
- D. Permanent environmental alteration**

The process that allows ecosystems to maintain stability amidst environmental changes is the adaptation and migration of species. Ecosystems are dynamic and can be influenced by various factors such as climate change, habitat destruction, and the introduction of invasive species. When environmental conditions change, species within an ecosystem can either adapt to the new conditions or migrate to a more suitable habitat. Adaptation can occur through evolutionary changes over generations, where traits that enhance survival and reproduction become more common within a population. This process helps maintain the ecological balance as species become better suited to their environments. Migration allows species to move to areas where conditions may be more favorable, ensuring their survival and the continuity of ecological interactions. Overall, this flexibility in species behavior—through both adaptation and migration—supports the resilience and sustainability of ecosystems when faced with challenges, contributing to their ability to stabilize in the face of change.

3. What does the term 'weather' refer to?

- A. The average temperature over years
- B. The condition of Earth's atmosphere at a particular time and place**
- C. Seasonal changes in temperature
- D. The climatic changes over decades

The term 'weather' specifically refers to the atmospheric conditions that occur at a particular time and place. This includes various elements such as temperature, humidity, precipitation, wind speed, and visibility. Weather is often described as short-term atmospheric phenomena and can change rapidly within hours or days. For instance, a sunny morning can turn into a rainy afternoon, highlighting the transient nature of weather patterns. In contrast, the other options describe concepts related to deeper time scales or broad patterns: the average temperature over years pertains to climate rather than weather, seasonal changes in temperature refer to predictable shifts over longer periods but do not capture the immediate quality of atmospheric conditions, while climatic changes over decades relate to long-term trends and averages in the climate system rather than specific, short-term weather events. Understanding that weather is about specific conditions at a definite moment helps to differentiate it from these broader climatic concepts.

4. What is the result of hormonal secretion by endocrine glands?

- A. Direct communication with nearby cells
- B. Regulation of various bodily functions**
- C. Promotion of cell division
- D. Enhancing neural signaling

The result of hormonal secretion by endocrine glands is primarily the regulation of various bodily functions. Endocrine glands release hormones directly into the bloodstream, which then travel to target organs and tissues throughout the body. These hormones act as chemical messengers that influence many physiological processes, including metabolism, growth and development, tissue function, sexual function, reproduction, sleep, and mood. This regulatory role is essential because hormones can affect processes over a wide-ranging timeframe, from rapid responses to gradual changes in bodily function. For example, insulin helps regulate blood sugar levels, while thyroid hormones control metabolic rate. Thus, the proper functioning of the endocrine system plays a critical role in maintaining homeostasis and overall health. The other options, while they involve certain aspects of physiological processes, do not capture the comprehensive and widespread role of hormones in regulating body functions.

5. Which process primarily occurs in the mitochondria?

- A. Photosynthesis**
- B. Translation of RNA**
- C. Cellular respiration**
- D. DNA transcription**

Cellular respiration is the process that primarily occurs in the mitochondria, which are often referred to as the "powerhouses" of the cell. This process involves converting glucose and oxygen into energy in the form of adenosine triphosphate (ATP), along with carbon dioxide and water as byproducts. The mitochondria contain inner membranes where the electron transport chain and the Krebs cycle take place, crucial steps in cellular respiration. In these stages, the breakdown of glucose leads to the production of ATP through aerobic processes. The unique structure of the mitochondria, with its double membrane and specialized enzymes, is ideally suited for these reactions, highlighting its central role in producing the energy that cells need to function. In contrast, photosynthesis occurs in the chloroplasts of plant cells, translation of RNA happens in ribosomes (which can be found in the cytoplasm or on the endoplasmic reticulum), and DNA transcription takes place in the nucleus. Each of these processes is vital for different cellular functions but is not primarily associated with the mitochondria.

6. What is the primary greenhouse gas emitted by human activities?

- A. Methane**
- B. Nitrous oxide**
- C. Carbon dioxide (CO₂)**
- D. Ozone**

The primary greenhouse gas emitted by human activities is carbon dioxide (CO₂). This gas results mainly from the burning of fossil fuels such as coal, oil, and natural gas for energy and transportation. Deforestation also contributes significantly to CO₂ emissions, as trees that absorb CO₂ are removed, and the carbon stored in trees is released back into the atmosphere when they are cut down or burned. CO₂ is particularly effective at trapping heat in the atmosphere, making it a critical factor in global warming and climate change. It represents the largest share of greenhouse gas emissions from human activities, which is why it is often the focus of climate change discussions and policies aimed at reducing emissions. Other greenhouse gases, while significant, are produced in smaller quantities compared to CO₂. For instance, methane and nitrous oxide, while potent greenhouse gases, have a lesser overall contribution to total annual emissions when compared to carbon dioxide.

7. What term refers to the transfer of energy from one object to another, typically experienced as heat?

- A. Energy conservation**
- B. Energy transfer**
- C. Energy transformation**
- D. Energy depletion**

The term that refers to the transfer of energy from one object to another, typically experienced as heat, is energy transfer. This process occurs when energy moves from a hotter object to a cooler one, such as when a warm cup of coffee loses heat to the surrounding air. Energy transfer is a fundamental concept in thermodynamics and plays a crucial role in various scientific principles, such as conduction, convection, and radiation. It illustrates how energy is not created or destroyed but rather moved between systems, leading to changes in thermal energy and temperature. In contrast, energy conservation refers to the principle that the total energy in a closed system remains constant over time, energy transformation describes the process of changing energy from one form to another (e.g., from kinetic to potential energy), and energy depletion refers to the reduction of energy resources, often in the context of nonrenewable energy sources. Understanding this distinction helps clarify why energy transfer is specifically associated with the movement and experience of heat.

8. Which process is NOT associated with the breaking down of materials on Earth?

- A. Weathering**
- B. Glaciation**
- C. Reforestation**
- D. Erosion**

The process that is not associated with the breaking down of materials on Earth is reforestation. Reforestation refers to the planting of trees in an area where forest cover has been removed. This process primarily focuses on restoring forests and enhancing ecosystems rather than breaking down materials. In contrast, weathering involves the physical and chemical breakdown of rocks and minerals into smaller particles. Glaciation refers to the processes associated with the movement and melting of glaciers, which can lead to the erosion and displacement of materials. Erosion is the movement of soil and rock from one location to another, usually facilitated by water, wind, or ice, contributing to the breakdown and redistribution of Earth's materials. Therefore, reforestation stands apart as it is aimed at recovery and restoration rather than disintegration.

9. What is the primary function of ribosomes in a cell?

- A. To synthesize proteins**
- B. To replicate DNA**
- C. To produce energy**
- D. To transport substances**

Ribosomes play a crucial role in the process of protein synthesis, which is essential for the functioning and growth of cells. They serve as the site where messenger RNA (mRNA) is translated into polypeptide chains, ultimately folding into functional proteins. This process occurs in two main stages: transcription, where DNA is converted into mRNA, and translation, where the ribosomes read the mRNA sequence and assemble amino acids into a protein. The specific structure of ribosomes, composed of ribosomal RNA (rRNA) and proteins, enables them to coordinate the interaction between mRNA and transfer RNA (tRNA), which carries the appropriate amino acids. This essential function makes ribosomes fundamental to the cell's ability to produce the proteins necessary for various biological activities, such as cellular structure, enzymatic functions, and signaling. While other cellular components are involved in processes such as DNA replication, energy production, and transport functions, ribosomes are uniquely specialized for the synthesis of proteins, highlighting their primary function in the cell.

10. In genetics, what is a locus?

- A. A physical location of a gene on a chromosome**
- B. A type of protein**
- C. A technique for genetic analysis**
- D. A mutation in the gene sequence**

A locus refers to a specific, fixed position on a chromosome where a particular gene or genetic marker is located. This term allows scientists to identify where genes reside within the larger context of the genomic structure. Each chromosome possesses many loci, and the arrangement of genes at these loci can affect traits and the inheritance patterns of organisms. Understanding the concept of a locus is fundamental in genetics as it aids in mapping genes and studying their functions and interactions. This information is crucial for tasks such as genetic testing, breeding programs, and understanding genetic disorders. While the other options mention important genetic concepts, they do not accurately define what a locus is. For instance, a type of protein relates to the products generated by genes rather than their locations, a technique for genetic analysis refers to methods used to study genetic material without defining the physical positioning of genes, and a mutation in the gene sequence denotes a change in the genetic code, not a specific location on a chromosome.

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://praxis2science7814.examzify.com>

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