Biology Regents 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. 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. Which of the following best describes the phenomenon of habitat destruction?

A. Increase in biodiversity

B. Loss of species

C. Creation of new habitats

D. Improvement of ecosystem services

2. Which change is an example of a response to a stimulus?

A. The pupil of an eye decreases in size in bright light

B. A leaf absorbs sunlight in the morning

C. The water level of a pond rises on a rainy day

D. A dead tree decays after many years

3. What role do predators play in an ecosystem?

A. They solely decrease prey populations

B. They have no impact on biodiversity

C. They help regulate prey populations

D. They create competition among other predators

4. How are carbon dioxide and oxygen cycled in ecosystems?

A. They are stored in the tissues of animals.

B. They are recycled through the activity of living and nonliving systems.

C. They are lost due to the activities of decomposers.

D. They are only released through photosynthesis.

5. Which organism is an example of a primary producer in an ecosystem?

A. Fungi

B. Plants

C. Herbivores

D. Carnivores

6. What is a karyotype?

A. A type of genetic mutation

B. A visual representation of an individual's chromosomes

C. A method for DNA sequencing

D. A process of cell division

7. A likely result of cutting down oak trees in an oak-hickory forest would be

A. Disruption of natural cycles

B. Conservation of these natural forest resources

C. Recycling of all the nutrients in the forest

D. Prevention of extinction of animals native to the area

8. Which statement accurately describes genes?

A. Proteins are made of genes that code for DNA.

B. Genes are made of proteins that code for nitrogen bases.

C. DNA is made of carbohydrates that code for genes.

D. Genes are made of DNA and code for proteins.

9. What is a likely reason that certain bacteria are no longer affected by a chemical added to hand sanitizers and dish detergents?

A. They have slower metabolic rates

B. They have a mutation for resistance

C. They have been selectively bred for survival

D. They have an adaptation to a different niche

10. What is the role of the endocrine system?

A. To regulate body temperature

B. To produce and secrete hormones that regulate bodily functions

C. To manage the immune system response

D. To maintain homeostasis through the nervous system

Answers

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

Explanations

1. Which of the following best describes the phenomenon of habitat destruction?

A. Increase in biodiversity

B. Loss of species

C. Creation of new habitats

D. Improvement of ecosystem services

Habitat destruction primarily refers to the process where natural habitats are altered or completely destroyed, often due to human activities such as deforestation, urbanization, and agriculture. This leads to a significant loss of biodiversity because many species depend on specific habitats for their survival, including food, shelter, and breeding grounds. When habitats are destroyed, the organisms that live in those environments often cannot survive or adapt quickly enough to new conditions, resulting in population declines and, ultimately, the extinction of some species. The phenomenon highlights how human impact on the environment can lead to a cascade of negative effects on ecosystems, significantly reducing the variety of life forms within those ecosystems. This decline in species abundance and variety directly connects to the overall health and balance of ecological systems, which rely on diversity to function effectively. Therefore, the best description of habitat destruction relates to the loss of species that occurs as habitats are compromised.

2. Which change is an example of a response to a stimulus?

A. The pupil of an eye decreases in size in bright light

B. A leaf absorbs sunlight in the morning

C. The water level of a pond rises on a rainy day

D. A dead tree decays after many years

The answer provided is a clear example of a response to a stimulus because it describes a physiological reaction that occurs in response to a specific environmental condition. In this case, bright light serves as the stimulus, and the pupil of the eye decreasing in size is the body's response to that stimulus. This process, known as the pupillary light reflex, is a protective mechanism that helps regulate the amount of light that enters the eye, allowing for optimal vision and preventing damage to the retina from excessive light. In contrast, when a leaf absorbs sunlight in the morning, this is a part of the process of photosynthesis and does not occur as a direct response to a variable stimulus—rather, it is an ongoing biological process. The rising water level of a pond on a rainy day is a natural physical occurrence due to the influx of rainwater and does not involve a direct response or adaptation from living organisms. A dead tree decaying over time is a process that is a result of the natural lifecycle and decomposition, unrelated to an immediate stimulus in the environment.

3. What role do predators play in an ecosystem?

A. They solely decrease prey populations

B. They have no impact on biodiversity

C. They help regulate prey populations

D. They create competition among other predators

Predators play a crucial role in regulating prey populations, which is vital for maintaining the balance of ecosystems. By controlling the number of prey species, predators prevent overpopulation and the subsequent depletion of resources, such as food and habitat. This regulatory effect helps to ensure that prey populations remain sustainable, promoting a healthy ecosystem. Additionally, the presence of predators can encourage prey species to behave differently, such as altering their feeding patterns and habitat use, which can lead to greater biodiversity. Predators contribute to the structure of the food web by maintaining the population dynamics within the ecosystem. This intricate balance fosters a more diverse environment, allowing various species to thrive without any one group dominating the landscape.

4. How are carbon dioxide and oxygen cycled in ecosystems?

A. They are stored in the tissues of animals.

B. They are recycled through the activity of living and nonliving systems.

C. They are lost due to the activities of decomposers.

D. They are only released through photosynthesis.

In ecosystems, carbon dioxide and oxygen are integral components that are continually recycled through various processes involving both living organisms and nonliving systems. The cycling begins with photosynthesis, where plants utilize carbon dioxide and sunlight to produce glucose and oxygen. This oxygen is then released into the atmosphere. Animals, on the other hand, consume oxygen during cellular respiration to convert glucose into energy, releasing carbon dioxide as a byproduct, which is then available for plants to use again. This back-and-forth exchange exemplifies a cyclical relationship between carbon dioxide and oxygen, influenced by biotic factors like plants and animals, and abiotic factors like the atmosphere and soil. This cyclical nature highlights the importance of both living and nonliving systems in maintaining the balance of gases essential for life on Earth. The processes are interlinked: during respiration, carbon dioxide is released, while during photosynthesis, oxygen is produced, demonstrating the vital role both gases play in sustaining ecosystems.

5. Which organism is an example of a primary producer in an ecosystem?

A. Fungi

B. Plants

C. Herbivores

D. Carnivores

Primary producers are organisms that can create their own energy through the process of photosynthesis or chemosynthesis, forming the foundation of the food chain in an ecosystem. Plants are a prime example of primary producers because they utilize sunlight, carbon dioxide, and water to produce glucose and oxygen through photosynthesis. This ability to convert inorganic substances into organic matter enables them to serve as a crucial energy source for other organisms within the ecosystem. Fungi, while important decomposers, do not produce their own energy from sunlight; instead, they break down organic material. Herbivores consume primary producers but do not produce energy themselves. Similarly, carnivores feed on herbivores or other carnivores and rely on the energy originally captured by primary producers. Thus, plants are distinct as primary producers that initiate the flow of energy in ecological networks.

6. What is a karyotype?

A. A type of genetic mutation

B. A visual representation of an individual's chromosomes

C. A method for DNA sequencing

D. A process of cell division

A karyotype is accurately defined as a visual representation of an individual's chromosomes. In this representation, chromosomes are typically arranged in pairs and organized according to their size, shape, and number. This allows for the examination of chromosome abnormalities, such as aneuploidy (an abnormal number of chromosomes) or structural abnormalities (like deletions, duplications, or translocations). Karyotyping is an important tool in genetics and medicine for diagnosing genetic disorders and understanding chromosomal conditions. The other options refer to different biological concepts. For instance, genetic mutations pertain to alterations in the DNA sequence, while DNA sequencing is a method used to determine the precise order of nucleotides in a DNA molecule. Additionally, cell division involves processes like mitosis and meiosis, which are responsible for reproduction and growth, but not visual representation of chromosomes.

7. A likely result of cutting down oak trees in an oak-hickory forest would be

A. Disruption of natural cycles

B. Conservation of these natural forest resources

C. Recycling of all the nutrients in the forest

D. Prevention of extinction of animals native to the area

Cutting down oak trees in an oak-hickory forest would likely cause a disruption of natural cycles. Forest ecosystems are highly interconnected; the removal of trees affects numerous biotic and abiotic components of the environment. Trees play a crucial role in processes such as photosynthesis, respiration, water cycling, and nutrient cycling. When oak trees are eliminated, their associated wildlife, soil health, and the overall ecological balance are disturbed. This disruption can lead to changes in microclimates, soil erosion, loss of habitat for various species, and alterations in the flow of nutrients in the ecosystem. For instance, without oak trees, specific species that depend on these trees for food or shelter may decline, which can have a cascading effect on other wildlife and plants in the area. In contrast, conservation of these natural resources, recycling of nutrients, and prevention of extinction may seem beneficial, but cutting down trees generally works against these goals, as it directly harms the forest ecosystem rather than conserving or effectively managing it.

8. Which statement accurately describes genes?

A. Proteins are made of genes that code for DNA.

B. Genes are made of proteins that code for nitrogen bases.

C. DNA is made of carbohydrates that code for genes.

D. Genes are made of DNA and code for proteins.

Genes are segments of DNA that serve as the instructions for synthesizing proteins, which are crucial for the structure and function of an organism. Each gene corresponds to a specific sequence of amino acids that form a protein. This relationship is foundational to the central dogma of molecular biology, which states that DNA is transcribed into RNA, and then translated into proteins. By defining genes as parts of DNA that code for the production of proteins, this answer encapsulates the role of genes in biological processes. It highlights how genetic information is stored and used in living organisms, establishing genes as the basic units of heredity. Understanding this function is essential for grasping how traits are inherited and expressed in organisms.

9. What is a likely reason that certain bacteria are no longer affected by a chemical added to hand sanitizers and dish detergents?

A. They have slower metabolic rates

B. They have a mutation for resistance

C. They have been selectively bred for survival

D. They have an adaptation to a different niche

Bacteria that are no longer affected by certain chemicals in hand sanitizers and dish detergents likely possess mutations that enable them to resist these substances. Such mutations can alter the structures or functions of the bacterial cell membranes or enzymes, decreasing the effectiveness of the sanitizers and detergents. Over time, through the process of natural selection, these resistant bacteria can become more prevalent in a population, as they survive and reproduce in environments where these chemicals are used. This phenomenon can occur due to selective pressure imposed by the frequent use of these products, leading to a population that is increasingly composed of individuals with resistance traits. The presence of these mutations clearly explains the reduced effectiveness of certain antimicrobial agents against them.

10. What is the role of the endocrine system?

A. To regulate body temperature

B. To produce and secrete hormones that regulate bodily functions

C. To manage the immune system response

D. To maintain homeostasis through the nervous system

The endocrine system plays a crucial role in the body by producing and secreting hormones, which are chemical messengers that travel through the bloodstream to target organs and tissues. These hormones regulate a wide array of bodily functions, including growth and development, metabolism, reproduction, and mood. The secretion of hormones occurs in various glands, such as the pituitary, thyroid, adrenal glands, and pancreas, and each gland has its specific functions and target tissues. For instance, insulin from the pancreas regulates blood glucose levels, while thyroid hormones influence metabolic rate. This system's coordination of hormone release allows the body to respond effectively to changes internally and externally, thereby maintaining overall health and optimal functioning. While other systems, like the nervous system, also play roles in homeostasis and bodily functions, the endocrine system uniquely focuses on hormonal regulation, distinguishing it from functions such as regulation of body temperature or immune responses.

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://regents-biology.examzify.com

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