

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

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- 1. How do organisms primarily adapt to their environment?**
 - A. Through natural selection over generations**
 - B. By changing their diet**
 - C. By moving to different habitats**
 - D. By reproducing more quickly**

- 2. What best describes the function of chloroplasts?**
 - A. To perform cellular respiration**
 - B. To create energy through photosynthesis**
 - C. To store genetic information**
 - D. To facilitate cell division**

- 3. What does a food web illustrate in an ecosystem?**
 - A. The flow of energy and nutrients between organisms**
 - B. The hierarchy of predator and prey relationships**
 - C. The distribution of species in a given area**
 - D. The impact of invasive species on native organisms**

- 4. What is the main function of ribosomes?**
 - A. DNA replication**
 - B. Protein synthesis**
 - C. Energy production**
 - D. Cell division**

- 5. Which cellular process leads to genetic diversity?**
 - A. Mitosis**
 - B. Meiosis**
 - C. Binary fission**
 - D. Cloning**

- 6. The increase in manatee deaths linked to pollution in the Banana River is an example of what?**
 - A. A natural cycle in an ecosystem.**
 - B. The effect of increased biodiversity on an ecosystem.**
 - C. Direct harvesting in an ecosystem.**
 - D. Human actions altering ecosystems with serious consequences.**

- 7. Which relationship is characterized by mutualism?**
- A. One organism benefits while the other is harmed**
 - B. Both organisms benefit from the interaction**
 - C. One organism benefits and the other is unaffected**
 - D. Both organisms compete for resources**
- 8. 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**
- 9. Which of the following is a role of proteins in living organisms?**
- A. Providing genetic information**
 - B. Serving as enzymes to catalyze reactions**
 - C. Storing genetic material**
 - D. Transporting oxygen in the blood**
- 10. How does adaptation relate to environmental challenges?**
- A. It decreases a species' chance of survival**
 - B. It ensures species remain unchanged**
 - C. It increases a species' chance of survival and reproduction**
 - D. It is unrelated to survival**

Answers

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

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Explanations

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1. How do organisms primarily adapt to their environment?

A. Through natural selection over generations

B. By changing their diet

C. By moving to different habitats

D. By reproducing more quickly

Organisms primarily adapt to their environment through natural selection over generations. This process involves the survival and reproduction of individuals with advantageous traits that enhance their ability to survive in a specific environment. Over time, these traits become more common within the population, leading to a gradual adaptation to environmental changes. Natural selection is driven by factors such as competition for resources, predation, and climatic conditions, which influence the success of individuals. While changing diet, moving to different habitats, or increasing reproductive rates can influence an organism's immediate survival, these actions do not lead to long-term adaptations in the same way that natural selection does. For instance, a quick change in diet might help an individual survive temporary food shortages, but it doesn't change the genetic traits of the population over generations. Similarly, moving to another habitat might provide immediate relief from unfavorable conditions, but without the accompanying genetic adaptations, it does not contribute to the long-term evolution of species within that environment. Lastly, reproducing more quickly could be beneficial for population growth but does not inherently lead to the successful adaptation of traits required for survival in changing environments. Therefore, natural selection remains the primary mechanism through which organisms undergo adaptive changes over time.

2. What best describes the function of chloroplasts?

A. To perform cellular respiration

B. To create energy through photosynthesis

C. To store genetic information

D. To facilitate cell division

Chloroplasts are specialized organelles found in plant cells and some algae that play a crucial role in the process of photosynthesis. Their primary function is to convert light energy, usually from the sun, into chemical energy stored in glucose, a sugar molecule. This process not only provides energy for the plant but also produces oxygen as a byproduct, which is essential for the survival of aerobic organisms, including humans. In photosynthesis, chlorophyll, the green pigment located in the chloroplasts, captures light energy, initiating a series of chemical reactions that transform carbon dioxide and water into glucose and oxygen. This process highlights the importance of chloroplasts in supporting life on Earth by contributing to the food chain and maintaining atmospheric oxygen levels. Other choices do not accurately describe the function of chloroplasts. For instance, cellular respiration occurs in mitochondria, storing genetic information is a function of the nucleus, and cell division is managed by structures such as the centrosome. Therefore, the correct answer emphasizes the role of chloroplasts in energy conversion through photosynthesis.

3. What does a food web illustrate in an ecosystem?

- A. The flow of energy and nutrients between organisms**
- B. The hierarchy of predator and prey relationships**
- C. The distribution of species in a given area**
- D. The impact of invasive species on native organisms**

A food web illustrates the flow of energy and nutrients between organisms within an ecosystem. It provides a complex representation of how different species interact through feeding relationships, showcasing who eats whom. This interconnected network highlights that energy from the sun is captured by producers (like plants), then passed on to consumers (herbivores and carnivores) as they form various feeding relationships. In a food web, multiple pathways are shown, as one organism can be part of several feeding interactions, illustrating the complexity and interdependence of ecosystem dynamics. This comprehensive perspective on energy transfer and nutrient cycling emphasizes the importance of each organism in maintaining the ecological balance.

4. What is the main function of ribosomes?

- A. DNA replication**
- B. Protein synthesis**
- C. Energy production**
- D. Cell division**

The primary function of ribosomes is to facilitate protein synthesis, which is the process of translating messenger RNA (mRNA) sequences into polypeptide chains, ultimately forming proteins. Ribosomes can be found floating freely in the cytoplasm or attached to the endoplasmic reticulum, where they play a crucial role in building proteins that are necessary for various cellular functions, such as enzyme activities and structural components. During protein synthesis, ribosomes read the sequence of nucleotides in mRNA, which is transcribed from DNA, and match it with the appropriate transfer RNA (tRNA) that carries specific amino acids. This interaction ensures that the correct sequence of amino acids is assembled, leading to the formation of functional proteins. The accurate functioning of ribosomes is vital because proteins are essential for the growth, repair, and maintenance of all living organisms.

5. Which cellular process leads to genetic diversity?

- A. Mitosis
- B. Meiosis**
- C. Binary fission
- D. Cloning

Meiosis is the cellular process that leads to genetic diversity through several mechanisms. This specialized form of cell division occurs only in organisms that reproduce sexually and results in the formation of gametes—sperm and eggs in animals, for example. One of the key features of meiosis is the process of crossing over during prophase I, where homologous chromosomes exchange segments of DNA. This recombination results in new combinations of alleles, contributing significantly to genetic variation among offspring. Additionally, meiosis involves two rounds of division, which reduces the chromosome number by half, and during metaphase I, the arrangement of chromosome pairs can vary, further enhancing diversity. The random assortment of chromosomes during gamete formation ensures that each gamete is genetically unique. In contrast, other processes like mitosis, binary fission, and cloning serve different purposes. Mitosis produces identical daughter cells for growth and repair, binary fission is a method of asexual reproduction in prokaryotes that results in genetically identical offspring, and cloning leads to organisms that are genetically identical to the original. None of these processes contribute to genetic diversity in the same way that meiosis does.

6. The increase in manatee deaths linked to pollution in the Banana River is an example of what?

- A. A natural cycle in an ecosystem.
- B. The effect of increased biodiversity on an ecosystem.
- C. Direct harvesting in an ecosystem.
- D. Human actions altering ecosystems with serious consequences.**

The increase in manatee deaths linked to pollution in the Banana River exemplifies how human actions can significantly alter ecosystems, leading to serious consequences for wildlife and biodiversity. In this case, pollution can result from various human activities, such as agricultural runoff, industrial discharges, or urban development, which introduce harmful substances into the environment. These pollutants can degrade the quality of the water, disrupt the food chain, and ultimately impact the health and survival of species like manatees. Manatees, being sensitive to their aquatic habitat, may suffer from decreased food availability, diseases, or direct toxicity from contaminants, which highlights the profound impact human behavior can have on natural ecosystems. Such scenarios underline the importance of environmental stewardship and the need for sustainable practices to protect vulnerable species and their habitats.

7. Which relationship is characterized by mutualism?

- A. One organism benefits while the other is harmed**
- B. Both organisms benefit from the interaction**
- C. One organism benefits and the other is unaffected**
- D. Both organisms compete for resources**

Mutualism is a type of symbiotic relationship where both organisms involved derive benefits from their interaction. In this context, each organism contributes to the well-being of the other, creating a partnership that enhances their survival, growth, or reproduction. For example, in a mutualistic relationship between bees and flowering plants, bees receive nectar for food while helping plants with pollination, which is essential for plant reproduction. This reciprocal benefit is the defining characteristic of mutualism, distinguishing it from other types of interactions, such as predation, commensalism, or competition.

8. 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.

9. Which of the following is a role of proteins in living organisms?

- A. Providing genetic information**
- B. Serving as enzymes to catalyze reactions**
- C. Storing genetic material**
- D. Transporting oxygen in the blood**

Proteins play a crucial role in living organisms, and one of their key functions is serving as enzymes that catalyze biochemical reactions. Enzymes are specialized proteins that accelerate reactions by lowering the activation energy required, allowing vital metabolic processes to occur more efficiently and at lower temperatures than would otherwise be possible. This catalytic ability is essential for cellular function, enabling processes such as digestion, energy production, and DNA replication. While proteins contribute to other functions, such as transporting oxygen in the blood (as in hemoglobin), their role as enzymes is foundational to nearly all biological processes. Unlike genetic material, which is primarily the function of nucleic acids, and protein storage, which does not relate to the fundamental function of enzymes, the ability of proteins to catalyze reactions highlights their importance in the physiology of all living organisms.

10. How does adaptation relate to environmental challenges?

- A. It decreases a species' chance of survival**
- B. It ensures species remain unchanged**
- C. It increases a species' chance of survival and reproduction**
- D. It is unrelated to survival**

Adaptation is a crucial concept in biology that pertains to how species adjust to their environments over time. When environmental challenges arise—such as changes in climate, availability of food, or presence of predators—species that have traits enabling them to cope with these challenges are more likely to survive and reproduce. The correct answer indicates that adaptation increases a species' chance of survival and reproduction. This is because through the process of natural selection, advantageous traits become more common in a population. For example, a species that develops a thicker fur coat in response to colder temperatures can better withstand the cold, leading to higher survival rates. Likewise, traits such as faster speeds or better camouflage can enhance an organism's ability to find food or evade predators, further promoting reproductive success. In summary, adaptations enhance a species' fitness in their specific environment, allowing them to thrive despite challenges. This concept is fundamental to understanding evolution and the diversity of life on Earth.

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!

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