

WESTERN GOVERNORS UNIVERSITY (WGU) BIO1010 C190 INTRODUCTION TO BIOLOGY PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED 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. 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. What is the purpose of chloroplasts in plant cells?**
 - A. To conduct cellular respiration
 - B. To capture light energy and conduct photosynthesis
 - C. To store genetic material
 - D. To provide structural support to the cell
- 2. Competition between organisms typically results in:**
 - A. Benefits for both species
 - B. Harm to both species
 - C. One species benefiting over the other
 - D. Neutral effects on both species
- 3. Which event leads to the formation of two or more separate species?**
 - A. Homology Event
 - B. Phylogenetic Event
 - C. Speciation Event
 - D. Gene Flow
- 4. What is gene expression?**
 - A. The process of DNA replication
 - B. The process by which the information encoded in a gene is used to direct the synthesis of a protein
 - C. The method of cell division
 - D. The mechanism of genetic mutation
- 5. What is the main importance of the ozone layer?**
 - A. It provides oxygen for living organisms
 - B. It absorbs most of the sun's harmful ultraviolet radiation, protecting living organisms on Earth
 - C. It regulates temperatures in the atmosphere
 - D. It forms clouds for precipitation

- 6. What happens to the nuclear envelope during Prometaphase?**
- A. It reforms around the chromosomes
 - B. It breaks down
 - C. It thickens
 - D. It disappears completely
- 7. Which type of bond is characterized by the complete transfer of valence electron(s) between atoms?**
- A. Covalent Bond
 - B. Ionic Bond
 - C. Hydrogen Bond
 - D. Peptide Bond
- 8. During cellular respiration, what is converted into ATP?**
- A. Carbohydrates
 - B. Proteins
 - C. Glucose
 - D. Fats
- 9. What does the term 'biodiversity' refer to?**
- A. The study of living organisms
 - B. The variety of life in a particular habitat or ecosystem
 - C. The relationship between organisms and their environment
 - D. The process of natural selection
- 10. How is a hypothesis best defined in scientific terms?**
- A. A conclusive explanation for a scientific phenomenon
 - B. A broad generalization based on extensive research
 - C. A testable prediction or explanation for a scientific phenomenon
 - D. An untestable theory concerning natural events

Answers

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

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Explanations

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1. What is the purpose of chloroplasts in plant cells?

- A. To conduct cellular respiration
- B. To capture light energy and conduct photosynthesis**
- C. To store genetic material
- D. To provide structural support to the cell

Chloroplasts play a crucial role in plant cells primarily by capturing light energy and conducting photosynthesis. This process is essential for converting light energy into chemical energy stored in glucose, which serves as food for the plant. Chloroplasts contain chlorophyll, the green pigment that absorbs sunlight and helps initiate the photosynthetic reactions. During photosynthesis, carbon dioxide from the atmosphere and water from the soil are transformed into glucose and oxygen, facilitating not only the survival of the plant but also providing oxygen and organic matter essential for life on Earth. In summary, the primary function of chloroplasts centers around their ability to harness sunlight and convert it into accessible energy through photosynthesis, which is vital for the energy flow in ecosystems.

2. Competition between organisms typically results in:

- A. Benefits for both species
- B. Harm to both species**
- C. One species benefiting over the other
- D. Neutral effects on both species

Competition between organisms typically results in harm to both species involved. This is because competition occurs when two or more species vie for the same limited resources, such as food, water, territory, or mates. When these resources are scarce, the struggle to acquire them can lead to reduced survival and reproductive success for both competitors. Even if one species is slightly more successful in securing the resource, the other species still suffers due to a lack of access. This dynamic reflects the inherent costs of competition, as energy and time are diverted towards competing rather than growing, reproducing, or engaging in other beneficial activities. Such outcomes can lead to decreased population sizes, reduced individual health, and overall lower fitness for both species involved in the competition. In contrast, the other options suggest scenarios where competition results in mutual benefit, one species gaining an advantage, or neutral effects, which do not accurately capture the typical consequences of competitive interactions in ecology.

3. Which event leads to the formation of two or more separate species?

- A. Homology Event
- B. Phylogenetic Event
- C. Speciation Event**
- D. Gene Flow

The formation of two or more separate species is specifically characterized by a speciation event. Speciation occurs when populations of a single species become genetically isolated from each other, often due to factors like geographical barriers, ecological differences, or reproductive isolation. Over time, these isolated populations evolve independently, leading to the accumulation of genetic differences that ultimately result in the emergence of distinct species. In contrast, the other choices refer to different biological concepts. Homology refers to similarities between species due to shared ancestry, which does not directly lead to speciation. A phylogenetic event pertains to the evolutionary relationships and histories among species, providing a framework for understanding speciation but not being the actual process of forming new species. Gene flow involves the transfer of genetic material between populations, which tends to maintain genetic cohesion and prevent speciation rather than promote it. Thus, a speciation event is the most accurate choice because it encapsulates the essence of how new species arise through evolutionary processes.

4. What is gene expression?

- A. The process of DNA replication
- B. The process by which the information encoded in a gene is used to direct the synthesis of a protein**
- C. The method of cell division
- D. The mechanism of genetic mutation

Gene expression is fundamentally the process by which the information contained within a gene is utilized to produce a functional product, typically a protein. This process begins when the DNA of a specific gene is transcribed into messenger RNA (mRNA). The mRNA then undergoes translation at the ribosome, where the sequence of nucleotides in the mRNA is decoded to assemble a chain of amino acids, forming a protein. This mechanism is essential for various cellular functions, development, and responses to environmental changes, as proteins play critical roles in the structure, function, and regulation of the body's tissues and organs. Understanding gene expression is crucial for fields such as genetics, molecular biology, and biotechnology, since it reveals how genes influence both physiological traits and the development of certain diseases.

5. What is the main importance of the ozone layer?

- A. It provides oxygen for living organisms
- B. It absorbs most of the sun's harmful ultraviolet radiation, protecting living organisms on Earth**
- C. It regulates temperatures in the atmosphere
- D. It forms clouds for precipitation

The main importance of the ozone layer is that it absorbs most of the sun's harmful ultraviolet (UV) radiation, which is crucial for protecting living organisms on Earth. The ozone layer is found in the stratosphere and serves as a shield that filters out the majority of the sun's UV rays, particularly UV-B and UV-C radiation, which can cause severe damage to skin, eyes, and immune systems in humans, as well as harmful effects on animals and plants. Inadequate absorption of UV radiation can lead to increased incidence of skin cancer and cataracts, as well as disrupt ecosystems and food chains. The protective role of the ozone layer is vital for maintaining the health of various life forms and ensuring the stability of natural biological processes. This function emphasizes the ozone layer's significance in maintaining life on Earth, rather than the other choices related to oxygen production, temperature regulation, or cloud formation.

6. What happens to the nuclear envelope during Prometaphase?

- A. It reforms around the chromosomes
- B. It breaks down**
- C. It thickens
- D. It disappears completely

During prometaphase, the nuclear envelope breaks down, which is a crucial step in the process of cell division, specifically during mitosis. As the cell transitions from prophase to prometaphase, this breakdown allows the microtubules from the mitotic spindle to attach to the chromosomes at the kinetochores, which are specialized protein structures formed on the centromeres of the chromosomes. This attachment is essential for the proper segregation of chromosomes into the daughter cells. The dissolution of the nuclear envelope creates an environment where the chromosomes, which have already condensed and become visible during prophase, can be effectively moved and organized within the cell in preparation for separation. Restoring the nuclear envelope occurs later in telophase, after chromosomes have been segregated to the poles of the cell, emphasizing the importance of its breakdown during prometaphase for successful mitosis.

7. Which type of bond is characterized by the complete transfer of valence electron(s) between atoms?

- A. Covalent Bond
- B. Ionic Bond**
- C. Hydrogen Bond
- D. Peptide Bond

The type of bond characterized by the complete transfer of valence electron(s) between atoms is an ionic bond. In ionic bonding, one atom donates one or more of its electrons to another atom, leading to the formation of charged ions. The atom that loses electrons becomes a positively charged ion (cation), while the atom that gains electrons becomes a negatively charged ion (anion). This transfer creates a strong electrostatic attraction between the oppositely charged ions, resulting in the formation of an ionic compound. This process typically occurs between atoms of significantly different electronegativities, such as sodium (Na) and chlorine (Cl). Sodium has a low electronegativity and readily loses its one valence electron, while chlorine has a high electronegativity and easily gains an electron. This exchange solidifies the ionic bond, distinguishing it from covalent bonds, where atoms share electrons rather than transferring them.

8. During cellular respiration, what is converted into ATP?

- A. Carbohydrates
- B. Proteins
- C. Glucose**
- D. Fats

The process of cellular respiration primarily converts glucose into ATP. During this metabolic pathway, glucose undergoes a series of reactions, starting with glycolysis, followed by the Krebs cycle (or citric acid cycle), and concluding with the electron transport chain. These stages serve to break down glucose, releasing energy that is captured in the form of ATP, which is the energy currency of the cell. While carbohydrates can also be involved in this process, glucose is the simplest form and serves as a direct substrate for the initial steps of cellular respiration. Proteins and fats can be metabolized to produce ATP, but this typically occurs through conversions into intermediate molecules that can enter the pathways used for glucose metabolism. Therefore, glucose is uniquely positioned as the primary molecule directly converted into ATP during cellular respiration, making it the correct answer.

9. What does the term 'biodiversity' refer to?

- A. The study of living organisms
- B. The variety of life in a particular habitat or ecosystem**
- C. The relationship between organisms and their environment
- D. The process of natural selection

The term 'biodiversity' specifically refers to the variety of life forms, including the different species of plants, animals, fungi, and microorganisms, as well as the genetic diversity within these species and the ecosystems they inhabit. It encompasses the complex interactions among species in a particular habitat or ecosystem and is essential for maintaining ecological balance and resilience. Biodiversity is critical for ecosystem function, providing essential services such as pollination, nutrient cycling, and regulation of climate. Each species plays a unique role in its ecosystem, contributing to its overall health and productivity. Areas with high biodiversity tend to be more stable and can better withstand environmental changes. The other options address related concepts but do not capture the full essence of biodiversity. The study of living organisms is more general and does not specifically focus on the variety within ecosystems. The relationship between organisms and their environment is an important aspect of ecology but does not solely define biodiversity. The process of natural selection, while a mechanism driving evolution and affecting species diversity, is not synonymous with biodiversity itself.

10. How is a hypothesis best defined in scientific terms?

- A. A conclusive explanation for a scientific phenomenon
- B. A broad generalization based on extensive research
- C. A testable prediction or explanation for a scientific phenomenon**
- D. An untestable theory concerning natural events

A hypothesis is best defined as a testable prediction or explanation for a scientific phenomenon because it serves as a foundation for scientific inquiry. It is not merely a guess; rather, it is formulated based on existing knowledge and observations, providing a clear statement that can be tested through experimentation or further observation. A good hypothesis should be specific and falsifiable, meaning that it can be supported or refuted based on experimental results. This characteristic of being testable enables scientists to gather data that either supports or contradicts the hypothesis, leading to deeper understanding and refinement of scientific theories. In contrast, a conclusive explanation implies a finality that is not characteristic of a hypothesis, as hypotheses are subject to change based on new evidence. A broad generalization might lack the specificity required for testing and does not focus on individual phenomena. Lastly, an untestable theory does not fit the definition of a hypothesis, as scientific hypotheses must be capable of being tested and examined against observations or experiments. This distinct nature of a hypothesis highlights its critical role in the scientific method and exploration.

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:

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

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