

BIOLOGY MARKING PERIOD 2 TEST PRACTICE (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. Distinguish between diffusion and osmosis.

- A. Osmosis is the diffusion of water across a selectively permeable membrane.
- B. Diffusion requires energy input from the cell.
- C. Diffusion is the movement of particles from high to low concentration; osmosis is diffusion of water across a selectively permeable membrane.
- D. Diffusion only occurs in liquids.

2. Which feature increases the surface area of mitochondria for energy production?

- A. The mitochondrial matrix
- B. Cristae
- C. The outer membrane
- D. Ribosomes

3. What are ecosystem services?

- A. The rate of erosion.
- B. Benefits humans receive from ecosystems, including provisioning, regulating, supporting, and cultural services.
- C. The amount of sunlight a forest receives.
- D. The number of species in an ecosystem.

4. In a simple food chain, a predator that eats herbivores is classified as which trophic level?

- A. Producer
- B. Primary consumer
- C. Secondary consumer
- D. Tertiary consumer

5. Distinguish diffusion from active transport.

- A. Diffusion uses energy to move molecules.
- B. Diffusion moves down a concentration gradient without energy; active transport uses energy to move against a gradient via pumps or transporters.
- C. Diffusion requires transport proteins; active transport does not require energy.
- D. Diffusion occurs only in liquids; active transport only in solids.

- 6. Explain Hardy-Weinberg equilibrium and list factors that disrupt it.**
- A. A null model of allele frequencies in a non-evolving population; factors include mutation, migration, natural selection, genetic drift, nonrandom mating.
 - B. A principle describing how alleles disappear; factors include aging and environmental changes only.
 - C. A theory about gene flow in bacteria; factors include horizontal transfer only.
 - D. A model of mutation rate in a population; factors include time of day.
- 7. Which process is endothermic?**
- A. Photosynthesis.
 - B. Combustion.
 - C. Freezing of water.
 - D. Condensation of water vapor.
- 8. What is a characteristic of proteins?**
- A. Proteins are assembled from nucleotides.
 - B. Proteins are used to store glucose.
 - C. Proteins are made of amino acids and help build muscles, skin, bones, tissue, and organs.
 - D. Proteins are hydrophobic.
- 9. Desert plants often have adaptations for storing water. Which feature illustrates this adaptation?**
- A. Long roots reaching deep water tables
 - B. Broad leaves for rapid transpiration
 - C. Water storage tissues in stems or leaves
 - D. Deep shade tolerance
- 10. Which statement describes the grassland biome?**
- A. Trees dominate with dense canopies
 - B. Very low temperatures year-round
 - C. Grasses dominate with few trees
 - D. High rainfall year-round

Answers

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

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Explanations

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1. Distinguish between diffusion and osmosis.

- A. Osmosis is the diffusion of water across a selectively permeable membrane.
- B. Diffusion requires energy input from the cell.
- C. Diffusion is the movement of particles from high to low concentration; osmosis is diffusion of water across a selectively permeable membrane.**
- D. Diffusion only occurs in liquids.

Diffusion is the random movement of particles from regions of higher concentration to lower concentration, and it doesn't require energy from the cell. Osmosis is a specific kind of diffusion: water moving across a selectively permeable membrane toward the side with higher solute concentration (lower water potential). The statement that ties these ideas together is the best because it defines diffusion in general and then identifies osmosis as diffusion of water through a membrane, making the relationship clear. Osmosis is water-specific, and it depends on the membrane being permeable to water but not necessarily to solutes, while diffusion applies to any substance moving down its own concentration gradient and can occur in gases, liquids, or solids. The other options misstate these points: diffusion is not energy-requiring, and it is not limited to liquids.

2. Which feature increases the surface area of mitochondria for energy production?

- A. The mitochondrial matrix
- B. Cristae**
- C. The outer membrane
- D. Ribosomes

Increase in energy production comes from having more inner-membrane area to host the machinery that makes ATP. The folds of the inner mitochondrial membrane, called cristae, massively expand that surface area. With more membrane space, more electron transport chain complexes and ATP synthase units can be present, allowing more protons to be pumped and more ATP to be synthesized. The mitochondrial matrix is where the citric acid cycle occurs, not where the surface area for respiration is expanded. The outer membrane surrounds the organelle and doesn't contribute directly to ATP production. Ribosomes are for protein synthesis and don't increase the inner membrane's surface area for energy generation.

3. What are ecosystem services?

- A. The rate of erosion.
- B. Benefits humans receive from ecosystems, including provisioning, regulating, supporting, and cultural services.**
- C. The amount of sunlight a forest receives.
- D. The number of species in an ecosystem.

Ecosystem services are the benefits humans receive from ecosystems. These include provisioning services like food, water, and medicines; regulating services such as climate regulation, flood control, and disease management; supporting services like pollination and nutrient cycling that keep ecosystems functioning; and cultural services including recreational, aesthetic, and spiritual value. This broader description best captures why ecosystems matter to people, beyond just the living organisms themselves. The other options describe a process (erosion rate), an abiotic factor (sunlight), or a biodiversity measure (number of species), none of which summarize the human benefits that ecosystems provide.

4. In a simple food chain, a predator that eats herbivores is classified as which trophic level?

- A. Producer
- B. Primary consumer
- C. Secondary consumer**
- D. Tertiary consumer

In a simple food chain, energy moves from producers that make their own food to primary consumers that eat those producers. When a predator eats herbivores, it's one step higher up the chain, so it's a secondary consumer. It isn't a producer because it doesn't synthesize its own food, and it isn't a primary consumer because it doesn't feed directly on producers. It would be a tertiary consumer only if it fed on other carnivores that have already eaten herbivores.

5. Distinguish diffusion from active transport.

- A. Diffusion uses energy to move molecules.
- B. Diffusion moves down a concentration gradient without energy; active transport uses energy to move against a gradient via pumps or transporters.**
- C. Diffusion requires transport proteins; active transport does not require energy.
- D. Diffusion occurs only in liquids; active transport only in solids.

Diffusion is a passive process where particles spread from places of higher concentration to lower concentration because of their random motion, and it happens without the cell spending energy. In contrast, active transport moves substances against their concentration gradient—from low to high concentration—by using energy, usually from ATP, through specific pumps or transport proteins. This energy investment lets the cell concentrate essential substances inside even when they're scarce outside. So the best description is that diffusion follows the concentration gradient without energy, while active transport uses energy to push substances up the gradient via pumps or transporters. The other statements confuse energy use or where diffusion can occur, so they don't fit the idea of how these two processes differ.

6. Explain Hardy-Weinberg equilibrium and list factors that disrupt it.

- A. A null model of allele frequencies in a non-evolving population; factors include mutation, migration, natural selection, genetic drift, nonrandom mating.**
- B. A principle describing how alleles disappear; factors include aging and environmental changes only.
- C. A theory about gene flow in bacteria; factors include horizontal transfer only.
- D. A model of mutation rate in a population; factors include time of day.

Hardy-Weinberg equilibrium is a baseline model for allele frequencies in a population that is not evolving. In this ideal scenario, allele and genotype frequencies stay constant across generations as long as certain conditions hold: a very large population, random mating, no mutation, no migration (gene flow), and no natural selection. When any of these conditions are violated, allele frequencies can change, signaling evolution. The factors that disrupt this equilibrium are precisely the evolutionary forces that violate those conditions: mutation introduces new alleles; migration brings in or removes alleles from outside populations; natural selection changes frequencies based on differential fitness; genetic drift causes random fluctuations, especially in small populations; and nonrandom mating alters genotype frequencies by skewing who mates with whom. So the statement that describes Hardy-Weinberg as a null model for allele frequencies in a non-evolving population and lists these disruptive forces best captures the concept.

7. Which process is endothermic?

- A. Photosynthesis.
- B. Combustion.
- C. Freezing of water.
- D. Condensation of water vapor.

Endothermic processes absorb energy from their surroundings. In photosynthesis, plants capture light energy and use it to drive the chemical reactions that convert carbon dioxide and water into glucose, storing energy in the chemical bonds. That input of energy from sunlight makes this process endothermic. The other options release energy: combustion releases heat and light, freezing releases heat to the surroundings as a liquid becomes a solid, and condensation releases latent heat as water vapor becomes liquid.

8. What is a characteristic of proteins?

- A. Proteins are assembled from nucleotides.
- B. Proteins are used to store glucose.
- C. Proteins are made of amino acids and help build muscles, skin, bones, tissue, and organs.
- D. Proteins are hydrophobic.

Proteins are polymers made from amino acids linked by peptide bonds, and they play many structural and functional roles in the body. That makes the statement that proteins are made of amino acids and help build muscles, skin, bones, tissue, and organs the best description. It reflects both what proteins are built from and how they contribute to the body's structure—think of collagen strengthening skin and bones, or actin and myosin enabling muscle contraction, along with other proteins forming tissues and organs. The other ideas don't fit as a general characteristic: nucleotides form nucleic acids like DNA and RNA, not proteins; glucose storage is handled mainly by glycogen (a carbohydrate), not proteins; and labeling proteins as hydrophobic oversimplifies their nature—proteins have surfaces with both hydrophilic and hydrophobic regions, depending on their amino acid makeup.

9. Desert plants often have adaptations for storing water. Which feature illustrates this adaptation?

- A. Long roots reaching deep water tables
- B. Broad leaves for rapid transpiration
- C. Water storage tissues in stems or leaves
- D. Deep shade tolerance

Desert plants survive dry spells by holding onto water inside their bodies. Water storage tissues in stems or leaves act like tiny reservoirs, filling up when rain is scarce and releasing water when it's needed for basic life processes. This makes it possible for the plant to keep cells turgid and continue photosynthesis even during long periods without rainfall. You can see this in succulents and cacti, where the stems or leaves swell with water and serve as stores for later use. Other options point to different strategies. Long roots help reach deeper water, which is about getting water, not storing it. Broad leaves would lose water quickly through transpiration, not conserve it. Deep shade tolerance isn't a desert-adaptation that addresses water storage. So the feature that best shows this adaptation is the presence of water storage tissues in stems or leaves.

10. Which statement describes the grassland biome?

- A. Trees dominate with dense canopies
- B. Very low temperatures year-round
- C. Grasses dominate with few trees**
- D. High rainfall year-round

Grassland biomes are defined by grasses as the main plant life rather than trees. Fire and grazing keep trees from becoming established, so you typically see few trees and a ground cover of grasses. The climate provides enough rainfall to support grasses but not so much that dense forests can form, and temperatures can vary with seasons. That combination—grasses dominating with only sparse trees—best fits the grassland description. The other options describe forests (dense tree canopies), extremely cold areas (very low temperatures year-round, like tundra), or rainforests (high rainfall year-round), which aren't characteristic of grasslands.

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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://biologymarkingperiod2.examzify.com>

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

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