

A LEVEL BIOLOGY PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. Which process results in chromatids with genetic diversity?**
 - A. Mitosis
 - B. Meiosis
 - C. Binary fission
 - D. Transcription
- 2. Which statement accurately describes hydrolysis in terms of molecular breakdown?**
 - A. It produces one large molecule
 - B. It requires the addition of a water molecule
 - C. It occurs without any energy change
 - D. It is the same as condensation reactions
- 3. When do chromosomes become visible under a microscope?**
 - A. During interphase
 - B. When cells are not dividing
 - C. When cells are preparing to divide
 - D. During cytoplasmic streaming
- 4. What is the function of semilunar valves in the circulatory system?**
 - A. To allow blood to flow back into the heart
 - B. To prevent blood from re-entering the heart from the arteries
 - C. To control blood flow between the atria and ventricles
 - D. To facilitate oxygen exchange in the lungs
- 5. What is the primary role of phospholipids in cells?**
 - A. Energy storage
 - B. Cell membrane structure
 - C. Protein synthesis
 - D. Digestion of fats
- 6. What does adhesion in plants refer to?**
 - A. The attraction between water molecules
 - B. The interaction of water molecules with soil
 - C. The attraction between water molecules and the walls of xylem vessels
 - D. The force pulling water up through plant roots

7. What role do antibodies play in relation to pathogens?

- A. Repairing cell membranes
- B. Clumping them together for easier elimination
- C. Producing cellular energy
- D. Transporting nutrients

8. Globular proteins are characterized as what type of proteins?

- A. Spherical, water-soluble proteins
- B. Long, fibrous proteins
- C. Rigid structural proteins
- D. Combination of both fibrous and globular structures

9. What is the main function of root hair cells?

- A. To transport nutrients in the xylem
- B. To increase surface area for absorption
- C. To perform photosynthesis
- D. To provide structural support

10. What are nucleic acids primarily made from?

- A. Amino acids
- B. Fatty acids
- C. Nucleotides
- D. Carbohydrates

Answers

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

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Explanations

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1. Which process results in chromatids with genetic diversity?

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

Meiosis is the process that results in chromatids with genetic diversity. This reduction division occurs specifically in the formation of gametes (sperm and eggs) and involves two rounds of division, Meiosis I and Meiosis II. During Meiosis I, homologous chromosomes pair up and undergo crossing over, an exchange of genetic material between chromatids. This shuffling of genes contributes to genetic diversity in the resulting gametes. Additionally, the random assortment of chromosomes during both divisions creates a wide variety of potential combinations of alleles. In contrast, mitosis produces two genetically identical daughter cells and does not involve the mechanisms that promote genetic variation, such as crossing over or independent assortment. Binary fission is a form of asexual reproduction found in prokaryotes, resulting in two identical cells without genetic diversity. Transcription is a process of synthesizing RNA from a DNA template and does not contribute to changes in genetic variation among chromatids.

2. Which statement accurately describes hydrolysis in terms of molecular breakdown?

- A. It produces one large molecule
- B. It requires the addition of a water molecule**
- C. It occurs without any energy change
- D. It is the same as condensation reactions

Hydrolysis is a biochemical process where a water molecule is used to break down a larger molecule into smaller components. This reaction is essential in various biological pathways, particularly in the digestion of macromolecules such as proteins, carbohydrates, and lipids. During hydrolysis, the addition of water helps to cleave specific bonds within the larger molecule, resulting in the formation of two or more smaller molecules. This process showcases water's crucial role as a reactant needed for the breakdown of complex compounds. The other options do not accurately represent hydrolysis. The formation of a single large molecule, the absence of energy changes during the process, and the similarity to condensation reactions all mischaracterize the nature and function of hydrolysis in molecular breakdown. In contrast, hydrolysis is specifically defined by the addition of water, making the accurate choice stand out clearly.

3. When do chromosomes become visible under a microscope?

- A. During interphase
- B. When cells are not dividing
- C. When cells are preparing to divide**
- D. During cytoplasmic streaming

Chromosomes become visible under a microscope when cells are preparing to divide, which typically occurs during the phases of mitosis or meiosis. As the cell enters prophase, which is the first stage of cell division, the chromatin condenses into distinct structures known as chromosomes. This condensation is crucial because it allows the chromosomes to be more easily separated and moved to opposite ends of the cell, ensuring accurate distribution of genetic material to daughter cells. During interphase, the chromatin is in a more relaxed state, making the individual chromosomes difficult to distinguish. Similarly, when cells are not dividing, such as during G1, S, or G2 phases of interphase, chromosomes are still not sharply visible. Cytoplasmic streaming, while a process that occurs in some cells for nutrient distribution, does not influence the visibility of chromosomes. Thus, visibility of chromosomes directly correlates with the active preparation for cell division, reinforcing the idea that they are most clearly seen during mitosis or meiosis.

4. What is the function of semilunar valves in the circulatory system?

- A. To allow blood to flow back into the heart
- B. To prevent blood from re-entering the heart from the arteries**
- C. To control blood flow between the atria and ventricles
- D. To facilitate oxygen exchange in the lungs

Semilunar valves play a crucial role in the circulatory system by preventing the backflow of blood from the arteries into the heart. After the ventricles contract and eject blood into the pulmonary artery (leading to the lungs) and the aorta (leading to the rest of the body), the semilunar valves close to ensure that the blood does not return to the heart. This function is vital for maintaining unidirectional blood flow and ensuring efficient circulation throughout the body. The other options do not accurately describe the role of semilunar valves. For example, allowing blood to flow back into the heart contradicts their primary purpose, which is to prevent such backflow. Controlling blood flow between the atria and ventricles is specifically managed by the atrioventricular valves, not the semilunar valves. Lastly, facilitating oxygen exchange in the lungs pertains to the function of the alveoli and the respiratory system, rather than the role of valves in the circulatory system.

5. What is the primary role of phospholipids in cells?

- A. Energy storage
- B. Cell membrane structure**
- C. Protein synthesis
- D. Digestion of fats

Phospholipids play a crucial role in the structure of cell membranes. They are key components of the lipid bilayer that forms the cell membrane, providing the barrier that separates the interior of the cell from the external environment. This bilayer structure is fundamental for maintaining the integrity of the cell, allowing selective permeability which enables the cell to control the movement of substances in and out. The hydrophilic (water-attracting) heads of phospholipids face outward towards the aqueous environments inside and outside the cell, while the hydrophobic (water-repelling) tails face inward, away from water. This arrangement is essential for creating an effective barrier that supports various cellular processes, including communication and transport. While phospholipids are not directly involved in energy storage, protein synthesis, or digestion of fats, they do contribute indirectly to these processes by forming membranes that host proteins involved in these activities or facilitate the transport of lipids and other molecules necessary for metabolism.

6. What does adhesion in plants refer to?

- A. The attraction between water molecules
- B. The interaction of water molecules with soil
- C. The attraction between water molecules and the walls of xylem vessels**
- D. The force pulling water up through plant roots

Adhesion in plants specifically refers to the attraction between water molecules and the walls of xylem vessels. This interaction is significant as it helps water climb against the force of gravity through the plant's vascular system. The properties of water, particularly its ability to form hydrogen bonds, enhance this adhesion, allowing water to "stick" to the cellulose in the xylem walls. This mechanism is crucial for the process of transpiration, where water is lost from leaves and creates a negative pressure that facilitates the upward movement of water from the roots. By adhering to the xylem walls, water not only supports this upward movement but also helps maintain column integrity, thus preventing cavitation, which can disrupt water transport within the plant. In short, the adhesion of water to the xylem vessels is a fundamental aspect of plant transport systems, enabling efficient hydration and nutrient transport throughout the organism.

7. What role do antibodies play in relation to pathogens?

- A. Repairing cell membranes
- B. Clumping them together for easier elimination**
- C. Producing cellular energy
- D. Transporting nutrients

Antibodies are specialized proteins produced by the immune system in response to the presence of pathogens such as bacteria and viruses. Their primary role is to bind specifically to these pathogens. By clumping the pathogens together, antibodies facilitate easier recognition and elimination by other components of the immune system, such as phagocytes. This process is also known as agglutination, which enhances the ability of the immune system to clear the infections efficiently. The other options do not relate to the function of antibodies. For example, repairing cell membranes is a role performed by various cellular components and enzymes, while producing cellular energy is primarily handled by mitochondria and metabolic processes. Transporting nutrients is managed by transport proteins and other mechanisms within the cell rather than by antibodies. Thus, the role of antibodies in clumping pathogens supports their crucial function in immune defense.

8. Globular proteins are characterized as what type of proteins?

- A. Spherical, water-soluble proteins**
- B. Long, fibrous proteins
- C. Rigid structural proteins
- D. Combination of both fibrous and globular structures

Globular proteins are primarily characterized as spherical, water-soluble proteins. Their structure is typically rounded, which allows them to be soluble in aqueous environments, making them vital for various biological functions. The spherical shape results from the folding of the polypeptide chain, largely driven by the chemical properties of the amino acids present, with hydrophobic residues often positioned on the interior and hydrophilic residues on the exterior. This configuration facilitates interactions with water, enabling globular proteins to function effectively in biological processes such as enzyme activity, transport, and signaling within cells. In contrast, fibrous proteins, which have long, extended structures, play different roles such as providing structural support. Rigid structural proteins are also distinct from globular ones, emphasizing robustness over functionality in solution. Lastly, the combination of fibrous and globular structures indicates a hybrid form that is not purely representative of globular proteins. Thus, the defining characteristic of globular proteins lies in their spherical form and ability to dissolve in water.

9. What is the main function of root hair cells?

- A. To transport nutrients in the xylem
- B. To increase surface area for absorption**
- C. To perform photosynthesis
- D. To provide structural support

The correct answer is focused on the primary role of root hair cells, which is to increase surface area for absorption. Root hair cells are specialized extensions of root epidermal cells that significantly enhance the ability of the plant to absorb water and dissolved nutrients from the soil. This increased surface area allows for more efficient uptake since the root hairs can come into close contact with soil particles and create a larger interface for absorption. Root hair cells do not transport nutrients in the xylem, as that function is performed by specialized xylem vessels. They also do not perform photosynthesis because photosynthesis primarily occurs in the green parts of the plant, such as leaves. Lastly, while root systems do provide structural support, this is not the main function of root hair cells, which are specifically adapted for enhancing nutrient and water uptake.

10. What are nucleic acids primarily made from?

- A. Amino acids
- B. Fatty acids
- C. Nucleotides**
- D. Carbohydrates

Nucleic acids, such as DNA and RNA, are primarily composed of nucleotides. Each nucleotide is made up of three components: a phosphate group, a five-carbon sugar (deoxyribose in DNA and ribose in RNA), and a nitrogenous base. The sequence and arrangement of these nucleotides dictate the genetic information carried by nucleic acids, playing a crucial role in the storage and transmission of genetic information in living organisms. The other options do not align with the structure of nucleic acids. Amino acids are the building blocks of proteins, fatty acids are components of lipids, and carbohydrates consist of sugar molecules like glucose. While these biomolecules are essential for various biological functions, they do not contribute directly to the formation of nucleic acids. Thus, the correct answer highlights the fundamental components specific to nucleic acids.

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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