

WJEC 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 structure in a cell is responsible for controlling what enters and exits?**
 - A. Cell wall
 - B. Cytoplasm
 - C. Plasma membrane
 - D. Nucleus

- 2. Which type of plants are characterized by the production of seeds?**
 - A. Non-flowering plants
 - B. Flowering plants
 - C. Aquatic plants
 - D. Conifers

- 3. What is the primary cause of acid rain?**
 - A. Carbon dioxide emissions
 - B. Emissions of sulfur dioxide and nitrogen oxides into the atmosphere
 - C. Overuse of fertilizers in agriculture
 - D. Deforestation

- 4. What happens to blood glucose levels when the pancreas releases glucagon?**
 - A. They decrease
 - B. They increase
 - C. They remain constant
 - D. They fluctuate

- 5. What is electronegativity?**
 - A. A measure of the concentration of hydrogen ions
 - B. A unit of energy in reactions
 - C. A measure of the tendency of an atom to attract electrons
 - D. A method to calculate reaction rates

6. What is a consequence of the overuse of antibiotics?

- A. Strengthened immune responses
- B. Development of normal flora
- C. Resistance in bacteria
- D. Increased susceptibility to diseases

7. What is the correct sequence of the taxonomic hierarchy?

- A. Kingdom, class, order, family, genus, phylum, species
- B. Kingdom, phylum, class, order, family, genus, species
- C. Phylum, kingdom, class, family, order, species, genus
- D. Species, genus, family, order, class, phylum, kingdom

8. What defines an ecosystem?

- A. A community of organisms and their physical environment
- B. The sum of all living organisms in a given area
- C. The number of species in a habitat
- D. The interactions between biotic and abiotic factors

9. What is one primary function of lymphocytes?

- A. Engulf bacteria
- B. Produce antibodies
- C. Repair blood vessels
- D. Activate platelets

10. What is the role of a control group in an experiment?

- A. It serves as a standard for comparison against the experimental group
- B. It enhances the uncertainty of the experiment
- C. It is the group that receives the experimental treatment
- D. It eliminates all variables from the experiment

Answers

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

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Explanations

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1. Which structure in a cell is responsible for controlling what enters and exits?

- A. Cell wall
- B. Cytoplasm
- C. Plasma membrane**
- D. Nucleus

The plasma membrane is the correct structure responsible for controlling what enters and exits a cell. It is a selectively permeable barrier formed primarily by a phospholipid bilayer, which has hydrophilic (water-attracting) heads facing outward and hydrophobic (water-repelling) tails facing inward. This arrangement allows the plasma membrane to regulate the movement of substances in and out of the cell, maintaining homeostasis. Through various mechanisms, such as passive transport (diffusion and osmosis) and active transport (requiring energy), the plasma membrane can control the exchange of ions, nutrients, and waste products. Embedded proteins play critical roles in this process, acting as channels, carriers, or receptors that help facilitate specific transport functions. Other structures mentioned, such as the cell wall, cytoplasm, and nucleus, serve different purposes. The cell wall provides structural support and protection in plant cells and some bacteria but is not involved in selective transport. The cytoplasm is the gel-like fluid inside the cell where organelles reside and biochemical reactions occur, and it does not control transport across the membrane. The nucleus contains the cell's genetic material and controls cellular activities but does not directly regulate substance movement across the plasma membrane.

2. Which type of plants are characterized by the production of seeds?

- A. Non-flowering plants
- B. Flowering plants**
- C. Aquatic plants
- D. Conifers

The selection of flowering plants as the correct answer is based on their distinct reproductive feature of producing seeds that are typically enclosed within fruits. Flowering plants, or angiosperms, represent a vast and diverse group in the plant kingdom, characterized by their flowers, which are the structures that facilitate sexual reproduction. The fertilization process leads to the development of seeds, often protected by the ovary, which matures into fruit. This adaptation not only aids in seed protection but also enhances the dispersal mechanisms through various means, such as wind, water, or animals. While conifers also produce seeds, they are specifically classified as gymnosperms, which means their seeds are typically not enclosed in fruits but instead are exposed on cones. Non-flowering plants, including ferns and mosses, do not produce seeds but reproduce via spores, making them fundamentally different from flowering plants. Aquatic plants may vary widely in their reproductive methods; some are flowering and produce seeds, while others may reproduce asexually or via spores. Therefore, flowering plants stand out as the primary group identified with seed production.

3. What is the primary cause of acid rain?

- A. Carbon dioxide emissions
- B. Emissions of sulfur dioxide and nitrogen oxides into the atmosphere**
- C. Overuse of fertilizers in agriculture
- D. Deforestation

The primary cause of acid rain is emissions of sulfur dioxide and nitrogen oxides into the atmosphere. When these pollutants are released from industrial processes, power plants, and vehicles, they react with water vapor, oxygen, and other chemicals in the atmosphere to form sulfuric and nitric acids. These acids then mix with rainwater, leading to acid rain. Acid rain can have detrimental effects on the environment, including damage to forests, lakes, and soils, as well as harm to aquatic life and buildings. This phenomenon highlights the importance of monitoring and regulating emissions of these substances to protect ecosystems and human structures. Understanding the sources and processes involved in acid rain formation is crucial for developing strategies to reduce its occurrence and mitigate its effects.

4. What happens to blood glucose levels when the pancreas releases glucagon?

- A. They decrease
- B. They increase**
- C. They remain constant
- D. They fluctuate

When the pancreas releases glucagon, blood glucose levels increase. Glucagon is a hormone produced by the alpha cells of the pancreas, and its primary role is to raise blood glucose levels when they fall below normal. When glucagon is secreted, it stimulates the liver to convert stored glycogen into glucose, a process known as glycogenolysis. This glucose is then released into the bloodstream, effectively elevating blood glucose levels. Additionally, glucagon can also promote gluconeogenesis, which is the production of glucose from non-carbohydrate sources, further contributing to the rise in glucose levels. This mechanism is crucial for maintaining homeostasis, especially during periods of fasting or between meals, when blood glucose levels are likely to drop. The release of glucagon acts as a counter-regulatory hormone to insulin, which is responsible for lowering blood glucose levels after meals.

5. What is electronegativity?

- A. A measure of the concentration of hydrogen ions
- B. A unit of energy in reactions
- C. A measure of the tendency of an atom to attract electrons**
- D. A method to calculate reaction rates

Electronegativity is defined as a measure of the tendency of an atom to attract electrons when it forms a chemical bond with another atom. This property is crucial in understanding how atoms interact with each other, particularly in covalent bonds where atoms share electrons. Higher electronegativity values indicate a stronger attraction for electrons, which influences the nature of the bond formed—whether it is covalent or ionic. For example, in molecules like water (H_2O), oxygen has a higher electronegativity compared to hydrogen, leading to a polar covalent bond where the shared electrons are drawn closer to the oxygen atom. This results in a partial negative charge on the oxygen and a partial positive charge on the hydrogens, which greatly affects the molecule's properties, including its polarity and hydrogen bonding capabilities. Understanding electronegativity is fundamental in predicting molecular behavior and reactivity, making choice C the correct answer to the question about its definition.

6. What is a consequence of the overuse of antibiotics?

- A. Strengthened immune responses
- B. Development of normal flora
- C. Resistance in bacteria**
- D. Increased susceptibility to diseases

The development of antibiotic resistance in bacteria is a significant consequence of the overuse of antibiotics. When antibiotics are used excessively or inappropriately, they create selective pressure on bacterial populations. This pressure allows bacteria with mutations or acquired resistance genes to survive and reproduce, leading to a population of bacteria that is no longer susceptible to the effects of those antibiotics. As resistant bacteria proliferate, infections caused by these organisms become more difficult to treat, leading to higher medical costs, longer hospital stays, and increased mortality. The phenomenon of antibiotic resistance is a growing public health concern and is linked directly to the misuse and overprescription of antibiotics in both human medicine and agriculture. In contrast, the other choices mentioned do not correctly address the primary consequence of overusing antibiotics. Strengthened immune responses, development of normal flora, and increased susceptibility to diseases do not accurately reflect the outcome of excessive antibiotic use. Instead, the focus should remain on the critical issue of resistance in bacteria as a direct result of this practice.

7. What is the correct sequence of the taxonomic hierarchy?

- A. Kingdom, class, order, family, genus, phylum, species
- B. Kingdom, phylum, class, order, family, genus, species**
- C. Phylum, kingdom, class, family, order, species, genus
- D. Species, genus, family, order, class, phylum, kingdom

The correct sequence of the taxonomic hierarchy is indeed Kingdom, phylum, class, order, family, genus, species. This hierarchical classification system organizes living organisms into increasingly specific categories. Starting with 'kingdom', this is the broadest classification level that categorizes organisms based on fundamental characteristics. Next, 'phylum' groups organisms that share a significant level of structural organization. Moving down the hierarchy, 'class' groups similar orders, while 'order' categorizes families with shared traits. 'Family' groups together closely related genera, and within a family, 'genus' refers to a group of species that are closely related, leading to 'species', the most specific classification, identifying individual organisms that can interbreed. This structured system allows biologists to accurately classify and communicate about organisms, facilitating scientific discussion and research. Each level of the hierarchy represents a more refined set of characteristics, ensuring clarity in the study of biodiversity. Understanding this hierarchy is crucial for fields such as ecology, evolutionary biology, and conservation.

8. What defines an ecosystem?

A. A community of organisms and their physical environment

B. The sum of all living organisms in a given area

C. The number of species in a habitat

D. The interactions between biotic and abiotic factors

An ecosystem is defined as a community of organisms and their physical environment interacting as a system. This definition highlights the integral relationship between living organisms (biotic factors) and their physical surroundings (abiotic factors). In an ecosystem, organisms are not only coexisting but also depend on each other and their environment for survival, which includes factors like water, soil, and climate. This interaction is crucial for the flow of energy and nutrients, and it emphasizes the interdependence of species and their habitats. Understanding an ecosystem in this way helps to appreciate its complexity, as it encompasses various interactions, including competition, predation, and symbiosis among species, as well as how these living beings influence and are influenced by their non-living environment. Other options, while relevant elements of ecological studies, do not capture this broad and integrative perspective of an ecosystem as well as this answer does.

9. What is one primary function of lymphocytes?

A. Engulf bacteria

B. Produce antibodies

C. Repair blood vessels

D. Activate platelets

Lymphocytes play a crucial role in the immune response, and one of their primary functions is to produce antibodies. When the body encounters a pathogen, lymphocytes, particularly a subset known as B cells, are activated. These B cells differentiate into plasma cells, which are responsible for synthesizing and secreting antibodies. Antibodies are proteins that specifically recognize and bind to antigens (foreign substances like bacteria and viruses), marking them for destruction or neutralization by other components of the immune system. This antibody production is vital for establishing immunity, as it allows the body to recognize and respond quickly to previously encountered pathogens. This not only aids in the immediate defense against infections but also contributes to long-term immunity, enabling the body to respond more effectively to future infections by the same pathogen.

10. What is the role of a control group in an experiment?

A. It serves as a standard for comparison against the experimental group

B. It enhances the uncertainty of the experiment

C. It is the group that receives the experimental treatment

D. It eliminates all variables from the experiment

The role of a control group in an experiment is to serve as a standard for comparison against the experimental group. By maintaining a control group that does not receive the experimental treatment or is not exposed to the variable being tested, researchers can observe and measure the effects of the treatment in the experimental group more accurately. This comparison helps to determine whether any observed changes in the experimental group can be attributed to the treatment itself or if they might be due to other factors. Essentially, the control group provides a baseline that strengthens the validity of the experimental results, enhancing the ability to make conclusions about the specific impact of the experimental variable.

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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