

WJEC BIOLOGY PRACTICE EXAM (SAMPLE)

STUDY GUIDE



Prepare with structure. Pass with confidence



Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	16

SAMPLE

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

SAMPLE

- 1. What is the function of stem cells in tissue repair?**
 - A. They develop into neural cells only
 - B. They replace dead or damaged cells
 - C. They form only blood cells
 - D. They promote cell division in existing cells
- 2. What is biological control?**
 - A. Using chemicals to eliminate pests
 - B. Using a living organism to control pests
 - C. Introducing non-native species to an area
 - D. Implementing crop rotation techniques
- 3. What principle states that two species competing for the same resources cannot coexist indefinitely?**
 - A. Natural selection
 - B. Founder effect
 - C. Competitive exclusion
 - D. Stabilizing selection
- 4. Which of the following is a common method of gene editing?**
 - A. CRISPR-Cas9 technology
 - B. Gene therapy by virus
 - C. RNA interference
 - D. Transgenic organisms
- 5. What example is given for antibiotic resistance?**
 - A. Streptococcus
 - B. MRSA
 - C. Escherichia coli
 - D. HIV
- 6. What is the first step in the process of natural selection?**
 - A. Mutation
 - B. Variation
 - C. Survival
 - D. Reproduction

- 7. During which phase of the cell cycle does DNA replication occur?**
- A. G1 phase
 - B. S phase
 - C. G2 phase
 - D. M phase
- 8. Which process do plants primarily use to convert sunlight into energy?**
- A. Respiration
 - B. Photosynthesis
 - C. Fermentation
 - D. Transpiration
- 9. What is the triplet code in genetics?**
- A. A sequence of 2 bases coding for an amino acid
 - B. A sequence of 3 bases coding for an amino acid
 - C. A single base that determines protein structure
 - D. A series of amino acids coding for a protein
- 10. What is the main action of white blood cells during an infection?**
- A. Increase blood flow
 - B. Foster tissue repair
 - C. Fight infections
 - D. Produce energy

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. What is the function of stem cells in tissue repair?

- A. They develop into neural cells only
- B. They replace dead or damaged cells**
- C. They form only blood cells
- D. They promote cell division in existing cells

Stem cells play a crucial role in tissue repair due to their unique ability to differentiate into various cell types and their capacity for self-renewal. When tissues are damaged, such as in an injury or disease, stem cells can migrate to the affected area. Once there, they have the potential to differentiate into the specific types of cells needed to restore the damaged tissue, effectively replacing dead or damaged cells with healthy ones. This regenerative capability is fundamental in healing processes across different types of tissues, such as muscles, skin, and blood. In contrast, limiting the function of stem cells to developing into neural cells, forming only blood cells, or promoting cell division in existing cells does not encompass their full role in repair mechanisms. Stem cells are not restricted to a single lineage; rather, they can give rise to various cell types as the situation requires, making their ability to replace dead or damaged cells pivotal in maintaining tissue integrity and function.

2. What is biological control?

- A. Using chemicals to eliminate pests
- B. Using a living organism to control pests**
- C. Introducing non-native species to an area
- D. Implementing crop rotation techniques

Biological control refers to the method of managing pest populations through the use of natural predators, parasites, or pathogens. This approach harnesses living organisms—such as insects, bacteria, or fungi—that specifically target and reduce pest populations without relying on synthetic chemicals. The use of living organisms in this way promotes a more sustainable and environmentally friendly means of pest control, as it seeks to mimic natural ecological processes. For instance, introducing a predator that feeds on a specific pest can help maintain that pest's population at manageable levels, thereby reducing the need for chemical pesticides and minimizing their potential harmful impact on the ecosystem. In contrast, using chemicals to eliminate pests can lead to a range of negative consequences, such as the development of pesticide resistance and harm to non-target species, including beneficial insects and plants. Introducing non-native species to control pests can further disrupt local ecosystems and lead to unintended consequences. Implementing crop rotation techniques is a method for managing soil health and pest populations but does not specifically involve the use of living organisms in the way biological control does.

3. What principle states that two species competing for the same resources cannot coexist indefinitely?

- A. Natural selection
- B. Founder effect
- C. Competitive exclusion**
- D. Stabilizing selection

The principle that states that two species competing for the same resources cannot coexist indefinitely is known as competitive exclusion. This concept is grounded in the idea that when two species vie for the same limited resources, one species will generally outcompete the other, leading to the decline or extinction of the less competitive species. This principle emphasizes the importance of resource allocation and niche differentiation in ecological communities. In essence, competitive exclusion illustrates how resource competition drives evolutionary changes and species distribution in an ecosystem. The principle can be traced back to the work of ecologists like G.F. Gause, who demonstrated through experiments that similar species cannot occupy the same ecological niche without one ultimately dominating. The other concepts mentioned, such as natural selection, founder effect, and stabilizing selection, pertain to different aspects of evolutionary biology and ecology and do not specifically address the dynamics of competition between species for shared resources. Natural selection refers to the process by which traits become more or less common in a population based on their survival and reproductive advantages. The founder effect describes a genetic phenomenon that occurs when a small group of individuals establishes a new population, potentially leading to reduced genetic diversity. Stabilizing selection is a form of natural selection that favors average traits over extremes, thus maintaining the status quo in certain

4. Which of the following is a common method of gene editing?

- A. CRISPR-Cas9 technology**
- B. Gene therapy by virus
- C. RNA interference
- D. Transgenic organisms

The correct choice highlights CRISPR-Cas9 technology as a common method of gene editing due to its precision and efficiency. This revolutionary technique allows scientists to make specific changes to the DNA of organisms by utilizing a guided RNA sequence to direct the Cas9 enzyme to a desired location in the genome. Once there, Cas9 can create a break in the DNA, enabling the addition, deletion, or alteration of genetic material. CRISPR-Cas9 stands out in the field of genetics because it is relatively straightforward to design and implement, making it accessible for researchers in a variety of biological fields. Its applications range from creating genetically modified organisms to developing new treatments for genetic disorders. The ease and versatility of CRISPR have contributed to its rapid adoption and recognition as one of the leading methods in gene editing today. Other methods listed, while significant in biotechnology and genetics, serve different purposes or operate on different principles. Gene therapy involves using viruses to deliver new genes into cells, RNA interference is a mechanism for regulating gene expression rather than editing, and transgenic organisms involve the incorporation of genes from one species into another but are not a method of editing existing genes within an organism's genome.

5. What example is given for antibiotic resistance?

- A. Streptococcus
- B. MRSA**
- C. Escherichia coli
- D. HIV

Antibiotic resistance is a critical issue in healthcare, and MRSA, or Methicillin-resistant *Staphylococcus aureus*, exemplifies this problem well. MRSA is a strain of the *Staphylococcus aureus* bacterium that has gained resistance to methicillin and other antibiotics, leading to challenging infections that are harder to treat. This resistance occurs due to genetic mutations and the ability of bacteria to acquire resistance genes from other bacteria. The increasing prevalence of MRSA in hospitals and communities highlights the public health threat it poses, as standard antibiotic treatments become ineffective, requiring alternative and often more costly treatment strategies. In contrast, the other options represent either non-bacterial pathogens or strains that are not primarily known for antibiotic resistance. *Streptococcus*, for instance, includes groups that can be treated with antibiotics, and *Escherichia coli*, while it can show resistance in specific strains, is not as widely recognized as a primary example of antibiotic resistance as MRSA. HIV is a virus and not treated with antibiotics, making it a different category altogether. Thus, MRSA stands out as the quintessential example of antibiotic resistance in bacterial infections.

6. What is the first step in the process of natural selection?

- A. Mutation**
- B. Variation
- C. Survival
- D. Reproduction

The first step in the process of natural selection is variation. Variation refers to the differences among individuals in a population, which can affect traits such as size, color, or behavior. These variations are essential because they provide the raw material upon which natural selection can act. Without variations, there would be no differences for the environment to select from, and evolution would not occur. In the context of natural selection, individuals with traits better suited to their environment tend to survive and reproduce more successfully than those with less advantageous traits. This survival and reproduction lead to the gradual accumulation of beneficial traits in the population over generations. Mutation can introduce new variations, but it is the existing variations that are critical for natural selection to take place. Reproduction is important in the process, as those individuals with advantageous traits must pass them on to the next generation for natural selection to have a lasting impact on the population. However, the presence of variation is the initial prerequisite for any evolutionary changes to occur through natural selection.

7. During which phase of the cell cycle does DNA replication occur?

- A. G1 phase
- B. S phase**
- C. G2 phase
- D. M phase

DNA replication occurs during the S phase of the cell cycle, which stands for "synthesis." This phase is critical as it is when the entire genetic material is duplicated, allowing each daughter cell to receive an exact copy of the genome during cell division. In this phase, enzymes like DNA polymerases synthesize new strands of DNA, ensuring that the two strands of the double helix are replicated accurately. This process is essential for cell division, as it prepares the cell to divide and ensures that genetic information is passed on correctly to the next generation of cells. In contrast, the G1 phase involves cell growth and normal function before the DNA synthesis begins, the G2 phase is a period of further growth and preparation for mitosis without DNA replication, and the M phase refers to mitosis itself, the process of cell division. Each of these phases plays a unique role, but only the S phase is specifically dedicated to the replication of DNA.

8. Which process do plants primarily use to convert sunlight into energy?

- A. Respiration
- B. Photosynthesis**
- C. Fermentation
- D. Transpiration

Plants primarily use photosynthesis to convert sunlight into energy. This process occurs in the chloroplasts of plant cells, where chlorophyll, the green pigment, captures light energy from the sun. During photosynthesis, plants take in carbon dioxide from the air and water from the soil. Using the light energy, they convert these raw materials into glucose (a type of sugar) and oxygen. The glucose produced serves as an energy source for the plant, supporting growth, reproduction, and other vital functions. The importance of photosynthesis cannot be overstated, as it not only fuels plant life but also contributes significantly to the Earth's atmosphere by producing oxygen, which is vital for the survival of most living organisms. This process is essential for the ecosystems as well since it forms the base of the food chain, providing energy for herbivores and, in turn, carnivores. In contrast, respiration refers to the process by which both plants and animals convert glucose and oxygen into energy, along with carbon dioxide and water as byproducts, and is reliant on the energy produced by photosynthesis. Fermentation is an anaerobic process that occurs in the absence of oxygen, often in certain microorganisms, and is not the primary means by which plants derive energy. Transpiration

9. What is the triplet code in genetics?

- A. A sequence of 2 bases coding for an amino acid
- B. A sequence of 3 bases coding for an amino acid**
- C. A single base that determines protein structure
- D. A series of amino acids coding for a protein

The triplet code in genetics refers to the way in which sequences of nucleotides in DNA or RNA are translated into amino acids, the building blocks of proteins. Each amino acid is specified by a sequence of three nucleotides, known as a codon. This means that a triplet of bases corresponds to one specific amino acid. For example, the codon "AUG" codes for the amino acid methionine, which is also the start signal for protein synthesis. This coding system is crucial because it establishes the precise link between the genetic code and the amino acid sequence in proteins, allowing for the synthesis of a vast diversity of proteins necessary for life. Each combination of three bases can potentially code for one of the twenty standard amino acids, thereby creating a rich vocabulary for protein assembly. In contrast, other options do not accurately define the triplet code. A sequence of two bases would not provide enough variability to code for all 20 amino acids effectively, a single base cannot determine protein structure on its own, and a series of amino acids refers to the resultant polypeptide or protein rather than the genetic coding system.

10. What is the main action of white blood cells during an infection?

- A. Increase blood flow
- B. Foster tissue repair
- C. Fight infections**
- D. Produce energy

The primary role of white blood cells during an infection is to fight infections. These cells are a crucial component of the immune system and serve various functions to protect the body from pathogens such as bacteria, viruses, and other foreign invaders. When an infection occurs, white blood cells are activated and mobilized to the site of infection, where they can identify and eliminate the pathogens. They do this through several mechanisms, including engulfing and digesting the invaders (a process called phagocytosis), producing antibodies that specifically target pathogens, and releasing signaling molecules that help coordinate the immune response. This action is essential for controlling and resolving infections, thereby helping to maintain overall health. The other options hint at important processes in the body but are not the main action of white blood cells during an infection. For instance, while increased blood flow can occur as part of the inflammatory response, it is not the primary function of white blood cells. Similarly, tissue repair is a later response that may involve white blood cells, but their immediate role is combatting the infection. Producing energy is unrelated to the function of white blood cells in the context of an infection management.

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://wjecbiology.examzify.com>

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

SAMPLE