OCR General Certificate of Secondary Education (GCSE) Biology Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

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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

1. **What is the purpose of applying ice to an injury in the RICE method?**

   A. To numb the injury completely

   B. To reduce swelling and slow blood flow

   C. To increase blood circulation

   D. To prevent bruising

2. **What cells are primarily responsible for forming body tissues?**

   A. Gametes

   B. Zygotes

   C. Stem cells

   D. Sperm cells

3. **Which type of respiration occurs in the presence of oxygen?**

   A. Aerobic respiration

   B. Anaerobic respiration

   C. Fermentation

   D. Photosynthesis

4. **Why are gametes genetically different from each other?**

   A. Because of mutations

   B. Because of environmental factors

   C. Due to random assortment and crossing over

   D. Due to parental influences

5. **What is the primary function of respiration in living organisms?**

   A. To absorb nutrients from food

   B. To synthesize proteins from amino acids

   C. To release energy from the food consumed

   D. To form glucose from carbon dioxide

6. Why are capillaries described as being one cell thick?

- **A. To prevent blood loss**
- **B. To increase the rate of diffusion**
- **C. To maintain high blood pressure**
- **D. To enable blood to flow quickly**

7. What can be a consequence of increasing the use of herbicides on GM crops?

- **A. Reduced crop productivity**
- **B. Development of resistant weed species**
- **C. Enhanced soil quality**
- **D. Increased biodiversity**

8. Which process in the carbon cycle involves plants?

- **A. Respiration relates the matter**
- **B. Photosynthesis takes in carbon dioxide**
- **C. Decomposition releases gases**
- **D. Fermentation of organic matter**

9. What does it mean if someone is red-green colour blind?

- **A. They cannot see any colours**
- **B. Their red or green cones in the retina are not working properly**
- **C. It means they see in black and white**
- **D. They see colours but confuse all shades**

10. What process draws water into root hair cells from the soil?

- **A. Diffusion**
- **B. Active transport**
- **C. Osmosis**
- **D. Endocytosis**

Answers

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

Explanations

1. What is the purpose of applying ice to an injury in the RICE method?

A. To numb the injury completely

B. To reduce swelling and slow blood flow

C. To increase blood circulation

D. To prevent bruising

The application of ice to an injury in the RICE method serves primarily to reduce swelling and slow down blood flow to the affected area. When ice is applied, it causes blood vessels to constrict, which helps to decrease the amount of blood that flows to the injury site. This reduction in blood flow is crucial because it limits the swelling that can occur after an injury, as excessive swelling can lead to increased pain and a longer recovery time. By minimizing swelling, the application of ice contributes to a more effective healing process, enabling individuals to manage pain and maintain mobility in the injured area. The cooling effect of the ice also provides temporary pain relief, but the main focus of this application is on controlling inflammation and swelling. Other options, like increasing blood circulation, would not be beneficial in the context of an acute injury where the goal is to manage swelling and inflammation. Additionally, while applying ice might numb the area temporarily, it does not completely numb the injury, and preventing bruising is not the primary reason for its application.

2. What cells are primarily responsible for forming body tissues?

A. Gametes

B. Zygotes

C. Stem cells

D. Sperm cells

Body tissues are primarily formed by stem cells, which are unique because they have the ability to differentiate into various specialized cell types. Stem cells can develop into muscle cells, nerve cells, blood cells, and other types of cells, making them fundamental for growth, development, and healing in multicellular organisms. Their versatility allows them to replenish tissues and contribute to the overall cellular architecture of the body. Gametes, such as sperm and eggs, are primarily involved in reproduction rather than the formation of tissues. Zygotes, which are formed when a sperm cell fertilizes an egg, are the earliest stage of development in multicellular organisms but rely on stem cells to develop into the different tissues in the body. Sperm cells, while essential for reproductive processes, do not participate in forming body tissues themselves. Thus, stem cells are recognized for their critical role in tissue formation.

3. Which type of respiration occurs in the presence of oxygen?

A. Aerobic respiration

B. Anaerobic respiration

C. Fermentation

D. Photosynthesis

Aerobic respiration is the type of respiration that occurs in the presence of oxygen. During this process, glucose is broken down with oxygen to produce carbon dioxide, water, and a significant amount of energy, typically in the form of ATP (adenosine triphosphate). This energy is essential for various cellular activities and processes in organisms, making aerobic respiration a highly efficient way to generate energy. The significance of aerobic respiration lies in its ability to yield much more energy compared to other forms of respiration, such as anaerobic respiration, which does not require oxygen and produces less energy. While fermentation can occur without oxygen, it is more broadly categorized under anaerobic processes. Photosynthesis, on the other hand, is a process utilized by plants to convert light energy into chemical energy but does not involve the breakdown of glucose for energy in the way respiration does.

4. Why are gametes genetically different from each other?

A. Because of mutations

B. Because of environmental factors

C. Due to random assortment and crossing over

D. Due to parental influences

Gametes are genetically different from each other primarily due to the processes of random assortment and crossing over during meiosis. Meiosis is the type of cell division that produces gametes—sperm and eggs—in sexually reproducing organisms. During prophase I of meiosis, homologous chromosomes pair up and can exchange segments of genetic material through a process called crossing over or recombination. This leads to new combinations of alleles on the chromosomes. Additionally, during metaphase I, the orientation of these homologous chromosome pairs is random, which means that the gametes can inherit different combinations of maternal and paternal chromosomes. This random assortment combined with crossing over results in a high level of genetic variation among the gametes. This genetic diversity is crucial for evolution and adaptation, as it increases the chances that some individuals within a population will have traits that suit them to changing environments. Other factors, like mutations or environmental influences, do not account for the systematic genetic differences seen in gametes produced during meiosis. Parental influences are also not a mechanism for the genetic variation seen in gametes, as they refer to the traits inherited by offspring but do not contribute directly to the genetic uniqueness of each gamete.

5. What is the primary function of respiration in living organisms?

A. To absorb nutrients from food

B. To synthesize proteins from amino acids

C. To release energy from the food consumed

D. To form glucose from carbon dioxide

Respiration is a vital process in living organisms that primarily serves the function of releasing energy from the food consumed. This energy is essential for various life processes, including growth, movement, and maintaining homeostasis. During respiration, glucose, which is a product of food digestion, is broken down in the presence of oxygen (in aerobic respiration) to produce carbon dioxide, water, and energy in the form of ATP (adenosine triphosphate). This energy can then be utilized for cellular functions, enabling organisms to perform necessary activities that sustain life. The focus on energy release distinguishes respiration from other biological processes such as nutrient absorption or protein synthesis, which, while important, are not the core purpose of respiration itself. The formation of glucose from carbon dioxide is actually part of photosynthesis, primarily occurring in plants, rather than respiration. Thus, the primary function of respiration is accurately captured by the option concerning energy release from consumed food.

6. Why are capillaries described as being one cell thick?

A. To prevent blood loss

B. To increase the rate of diffusion

C. To maintain high blood pressure

D. To enable blood to flow quickly

Capillaries are described as being one cell thick primarily to increase the rate of diffusion. This thin structure allows for more efficient exchange of materials such as oxygen, carbon dioxide, nutrients, and waste products between the blood and surrounding tissues. The single layer of endothelial cells minimizes the distance over which diffusion must occur, facilitating quicker transfer of substances. This design is crucial because capillaries are the sites of exchange in the circulatory system, and maximizing the surface area-to-volume ratio enhances the efficacy of this process. Other considerations, such as blood loss, high blood pressure, or the speed of blood flow, are not the primary reasons for the thin structure of capillaries. The focus is instead on optimizing diffusion, which is essential for maintaining cellular respiration and overall tissue health.

7. What can be a consequence of increasing the use of herbicides on GM crops?

A. Reduced crop productivity

B. Development of resistant weed species

C. Enhanced soil quality

D. Increased biodiversity

Choosing "Development of resistant weed species" is correct because the repeated use of herbicides, especially non-selective ones or those with the same action mechanism, can lead to certain weed species developing resistance. This happens through natural selection: those weeds that have genetic variations allowing them to survive the herbicide will reproduce, passing on those resistant traits to their offspring. Over time, this can create a population of weeds that are difficult to control, leading farmers to use even more herbicides or different types, escalating the problem. In contrast, reduced crop productivity typically stems from various factors, but is not directly a consequence of increasing herbicide use. Enhanced soil quality is generally negatively impacted by excessive herbicide usage, which can reduce soil microbial diversity and health. Similarly, increased biodiversity is usually adversely affected since herbicides can kill unintended plants and organisms in the ecosystem, leading to a reduction in overall biodiversity.

8. Which process in the carbon cycle involves plants?

A. Respiration relates the matter

B. Photosynthesis takes in carbon dioxide

C. Decomposition releases gases

D. Fermentation of organic matter

The process in the carbon cycle that involves plants is photosynthesis, which takes in carbon dioxide. During photosynthesis, plants absorb carbon dioxide from the atmosphere through small openings in their leaves called stomata. They utilize this carbon dioxide, along with sunlight and water, to produce glucose—a type of sugar that serves as food for the plant. This process also releases oxygen as a byproduct, which is essential for the survival of most living organisms. Photosynthesis is crucial in the carbon cycle because it serves as the primary mechanism by which carbon, a fundamental element for life, is captured from the atmosphere and converted into organic matter. This conversion forms the foundation of the food web, as many organisms depend on plants for energy and nutrients.

9. What does it mean if someone is red-green colour blind?

A. They cannot see any colours

B. Their red or green cones in the retina are not working properly

C. It means they see in black and white

D. They see colours but confuse all shades

Being red-green color blind indicates that there is an issue with the function of the red or green cones in the retina, which are responsible for detecting those specific colors. In individuals with this condition, the cones may be absent, not functioning properly, or may perceive these colors inaccurately. This results in a reduced ability to distinguish between red and green hues, affecting their overall color perception. The other options do not accurately describe red-green color blindness. The condition does not mean that the person cannot see any colors at all, nor does it imply that they see only in black and white. Additionally, while individuals may indeed confuse red and green shades, it is more specific to certain colors rather than all shades. Thus, stating that the red or green cones in the retina aren't functioning properly captures the essence of red-green color blindness correctly.

10. What process draws water into root hair cells from the soil?

A. Diffusion

B. Active transport

C. Osmosis

D. Endocytosis

The correct answer is osmosis, which is the process through which water moves across a selectively permeable membrane. In the context of root hair cells, osmosis occurs when water from the soil moves into the cells due to differences in water potential. The soil typically has a higher concentration of water (lower solute concentration) compared to the interior of the root hair cells, which may have a higher concentration of solutes (like minerals and nutrients). As a result, water naturally moves from the area of higher water concentration (the soil) into the area of lower water concentration (inside the root hair cells) through osmosis. This process does not require energy, as it relies on the passive movement of water molecules, which is driven by the concentration gradient. Understanding osmosis is fundamental in biology, especially in plant physiology, because it explains how plants absorb water and maintain turgor pressure, which is crucial for their structure and overall health.

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://ocr-gcse-biology.examzify.com

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