Assessment and Qualifications Alliance (AQA) GCSE Biology Paper 1 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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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 using a dropping pipette in the enzyme activity investigation?

A. To measure the temperature

B. To take a fresh sample from the boiling tube

C. To mix the samples

D. To deposit the amylase solution

2. What is the function of the trachea in the respiratory system?

A. It filters air

B. It carries air to the lungs

C. It produces mucus

D. It exchanges gases

3. How do leaves maximize the intake of carbon dioxide?

A. By having thick outer layers

B. By having stomata and a flattened shape

C. By being dormant during the day

D. By reducing surface area

4. What distinguishes active transport from diffusion?

A. Active transport occurs without energy

B. Active transport moves along the concentration gradient

C. Active transport requires energy

D. Active transport only occurs in plants

5. What process occurs in chloroplasts?

A. Cell respiration

B. Protein synthesis

C. Photosynthesis

D. Cell division

6. What is a common approach to alleviate symptoms of muscle fatigue after exercise?

A. Immediate high-intensity training

B. Active recovery and hydration

C. Completing further exercise sessions

D. Ignoring the fatigue

7. Where are stem cells predominantly found in human bodies?

A. In the skin layers

B. In early human embryos or bone marrow

C. In the liver

D. In the lungs

8. What effect do leaves that drop or curl when touched serve in plants?

A. To attract more insects

B. To help knock insects off the leaves

C. To enhance photosynthesis

D. To increase root absorption

9. Which of the following is true about the immune system's memory?

A. It forgets infections after treatment

B. It permanently eliminates all pathogens

C. It allows for faster response to previously encountered pathogens

D. It only remembers viral infections

10. Which organ system includes the pancreas and salivary glands?

A. Respiratory system

B. Nervous system

C. Circulatory system

D. Digestive system

Answers

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

Explanations

1. What is the purpose of using a dropping pipette in the enzyme activity investigation?

A. To measure the temperature

B. To take a fresh sample from the boiling tube

C. To mix the samples

D. To deposit the amylase solution

The purpose of using a dropping pipette in an enzyme activity investigation is primarily to deposit the amylase solution with precision. By using a pipette, researchers can control the volume and the rate at which the enzyme solution is added to the substrate (like starch). This careful addition is crucial for accurately measuring the enzyme's activity, as even slight variations in the amount of enzyme can significantly affect the reaction rate. Using a dropping pipette allows for easy handling and minimizes the risk of contamination or exposure to the enzyme outside the controlled setting of the assay. This controlled method aids in ensuring that the investigation yields reliable results regarding how the enzyme functions under the specific conditions being studied.

2. What is the function of the trachea in the respiratory system?

A. It filters air

B. It carries air to the lungs

C. It produces mucus

D. It exchanges gases

The trachea plays a crucial role in the respiratory system primarily by carrying air to the lungs. As a conduit for air, it connects the larynx to the bronchi, allowing inhaled air to travel directly from the throat to the lungs. The structure of the trachea, which is reinforced by cartilage rings, ensures that it remains open and provides a clear passage for airflow. While the trachea does have some functions related to filtering air and producing mucus, its primary function is to transport air. The filtering occurs through the presence of ciliated cells and mucus, which trap particles and pathogens, but this is more of a supportive function rather than the main purpose. The trachea itself does not engage in gas exchange, as this process occurs in the alveoli of the lungs, where oxygen and carbon dioxide are exchanged between the air and the bloodstream. Thus, while the trachea may assist in filtering and help to produce mucus, its essential role is to carry the air we breathe to the lungs for gas exchange to take place.

3. How do leaves maximize the intake of carbon dioxide?

A. By having thick outer layers

B. By having stomata and a flattened shape

C. By being dormant during the day

D. By reducing surface area

The correct choice highlights two key adaptations of leaves that enable them to effectively maximize carbon dioxide intake. Firstly, leaves possess stomata, which are small openings on the surface of the leaf. These stomata allow carbon dioxide from the atmosphere to diffuse into the leaf for photosynthesis. The regulation of these stomata, which can open and close in response to environmental conditions, ensures that the leaf can optimize gas exchange while minimizing water loss. Secondly, the flattened shape of the leaf increases the surface area exposed to sunlight and air, facilitating a greater opportunity for gas exchange. This flat structure ensures that most of the photosynthetic cells within the leaf are close to the surface, enabling efficient absorption of carbon dioxide, as well as sunlight for photosynthesis. In contrast to this option, having thick outer layers would inhibit gas exchange by making it harder for carbon dioxide to enter the leaf. Being dormant during the day would limit the active intake of carbon dioxide when sunlight is available for photosynthesis. Reducing surface area would also decrease the efficient capture of carbon dioxide because there would be less area for gas exchange to occur. Hence, the combination of stomata and a flattened shape is vital for maximizing carbon dioxide intake effectively.

4. What distinguishes active transport from diffusion?

A. Active transport occurs without energy

B. Active transport moves along the concentration gradient

C. Active transport requires energy

D. Active transport only occurs in plants

Active transport is characterized by its requirement for energy input to move substances across cell membranes. This process is crucial when cells need to transport molecules against their concentration gradient, meaning from an area of lower concentration to one of higher concentration. This is different from diffusion, where substances move naturally down their concentration gradient without the need for energy, driven solely by the kinetic energy of the molecules. In many biological processes, such as the uptake of essential ions by plant roots or the absorption of glucose in the intestines, active transport allows cells to maintain concentration differences that are vital for various functions. Therefore, the distinguishing feature of active transport being energy-dependent emphasizes its role in maintaining homeostasis and allowing cells to have higher concentrations of necessary substances than are present in the surrounding environment. This energy is typically harnessed from ATP, the energy currency of the cell, underscoring the active nature of this transport mechanism.

5. What process occurs in chloroplasts?

A. Cell respiration

B. Protein synthesis

C. Photosynthesis

D. Cell division

Chloroplasts are specialized organelles found in plant cells and some protists, and their main function is to carry out photosynthesis. During photosynthesis, chloroplasts capture light energy from the sun and use it to convert carbon dioxide and water into glucose and oxygen. This process is essential for the survival of plants because it allows them to produce their own food and release oxygen, which is vital for the respiration of most living organisms. The structure of chloroplasts includes thylakoids, where the light-dependent reactions occur, and the stroma, where the light-independent reactions (Calvin cycle) take place. By facilitating the conversion of solar energy into chemical energy stored in glucose, chloroplasts play a critical role in the energy flow within ecosystems, as plants are primary producers and serve as a food source for other organisms. In contrast, the other processes mentioned are carried out in different parts of the cells or in different types of cells entirely. Cell respiration occurs in the mitochondria and is the process by which cells break down glucose to release energy. Protein synthesis occurs in the ribosomes, where amino acids are assembled into proteins based on genetic instructions. Cell division, such as mitosis or meiosis, involves the replication and separation of

6. What is a common approach to alleviate symptoms of muscle fatigue after exercise?

A. Immediate high-intensity training

B. Active recovery and hydration

C. Completing further exercise sessions

D. Ignoring the fatigue

Active recovery and hydration are effective methods to alleviate symptoms of muscle fatigue after exercise. During intense workouts, muscle fibers undergo stress and microscopic damage, leading to a buildup of metabolites like lactic acid which contributes to the sensation of fatigue. Active recovery involves engaging in low-intensity activities, such as walking or gentle stretching, which helps stimulate blood flow to the fatigued muscles. This enhanced circulation facilitates the removal of waste products and replenishment of nutrients and oxygen, aiding in recovery. Hydration plays a crucial role as well, as fluids are vital for muscle function and metabolic processes. Proper hydration can help restore electrolyte balance and prevent cramping, which is often associated with muscle fatigue. Combining active recovery with adequate hydration allows the body to recover more efficiently, reducing the duration and severity of fatigue experienced after exercise. In contrast, high-intensity training immediately after a workout can exacerbate fatigue rather than alleviate it. Completing further exercise sessions without adequate recovery can lead to overtraining and increased fatigue. Ignoring muscle fatigue could potentially lead to injury and longer recovery times, therefore it's essential to actively address it through the right strategies.

7. Where are stem cells predominantly found in human bodies?

A. In the skin layers

B. In early human embryos or bone marrow

C. In the liver

D. In the lungs

Stem cells are primarily found in early human embryos and in the bone marrow of adults. In the early stages of development, embryonic stem cells are pluripotent, meaning they have the ability to differentiate into any cell type in the body, which is crucial for development and growth. As the embryo develops, these stem cells can give rise to all the different tissues and organs. In adults, stem cells are found in specific tissues, with bone marrow being a rich source. Adult stem cells, also known as hematopoietic stem cells, in the bone marrow are responsible for producing the various types of blood cells, including red blood cells, white blood cells, and platelets. This regenerative ability is vital for maintaining the body's blood supply and repairing tissue. While other tissues such as skin may contain stem cells for the purpose of regeneration and repair, the predominant locations recognized for stem cell presence in both developing embryos and adults are the early human embryos and the bone marrow. This context highlights the critical roles stem cells play in both development and healing throughout the human body.

8. What effect do leaves that drop or curl when touched serve in plants?

A. To attract more insects

B. To help knock insects off the leaves

C. To enhance photosynthesis

D. To increase root absorption

When leaves drop or curl when touched, this rapid movement serves as a defense mechanism that helps to dislodge potential herbivores or insects that might be feeding on the plant. This response is particularly observed in certain plants, like the sensitive plant (Mimosa pudica), which reacts to stimuli in order to protect itself from damage. The curling or drooping of leaves makes it more difficult for insects to establish a foothold, thus allowing the plant to reduce herbivory and enhance survival. The other options do not accurately capture the primary function of this movement. For instance, attracting more insects or enhancing photosynthesis are not direct consequences of leaf movement in response to touch, nor does this behavior play a role in increasing root absorption. The primary goal is indeed to deter and potentially remove pests, thereby protecting the plant's overall health.

9. Which of the following is true about the immune system's memory?

A. It forgets infections after treatment

B. It permanently eliminates all pathogens

C. It allows for faster response to previously encountered pathogens

D. It only remembers viral infections

The immune system's memory plays a crucial role in its ability to protect the body from pathogens. When the immune system encounters a pathogen, it generates a specific response, including the production of memory cells. These memory cells are long-lived and remain in the body after the initial infection is cleared. If the same pathogen is encountered again in the future, these memory cells enable the immune system to recognize it quickly and mount a more rapid and effective response compared to the first time. This enhanced response is why vaccinations are effective, as they prepare the immune system to deal with specific pathogens. The other options do not accurately describe the immune system's memory. For instance, the immune system does not forget infections after treatment since memory cells remain to provide long-term immunity. It also does not permanently eliminate all pathogens, as some can evade the immune response. Additionally, memory is not limited to viral infections; the immune system can remember both bacterial and viral pathogens, enhancing protection against a wide range of infectious agents.

10. Which organ system includes the pancreas and salivary glands?

A. Respiratory system

B. Nervous system

C. Circulatory system

D. Digestive system

The digestive system is responsible for breaking down food and absorbing nutrients, and it includes various organs that play critical roles in this process. The pancreas and salivary glands are both integral components of this system. The pancreas produces digestive enzymes and hormones, such as insulin, that help regulate blood sugar levels and assist in digestion. It releases these enzymes into the small intestine, aiding in the breakdown of carbohydrates, proteins, and fats. Salivary glands, on the other hand, produce saliva, which contains enzymes that initiate the digestion of carbohydrates and also moistens food, making it easier to chew and swallow. Saliva plays a crucial role in ensuring that food can be effectively digested as it moves through the digestive tract. Together, these organs help facilitate the chemical and mechanical processes necessary for proper digestion and absorption of nutrients, clearly placing them within the digestive system. The other systems mentioned — respiratory, nervous, and circulatory — have different functions unrelated to the direct process of digestion.

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://aqa-gcse-biologypaper1.examzify.com

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