

Assessment and Qualifications Alliance (AQA) GCSE Biology Paper 2 Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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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

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. Increasing the frequency of collisions in a reaction typically results in what outcome?**
 - A. A decrease in rate of reaction**
 - B. No change in rate of reaction**
 - C. An increase in rate of reaction**
 - D. A halt in the reaction process**
- 2. For how long has the proportions of the different gases in the atmosphere remained much the same?**
 - A. 100 million years**
 - B. 200 million years**
 - C. 300 million years**
 - D. 400 million years**
- 3. What is the primary role of greenhouse gases in the atmosphere?**
 - A. To block harmful UV rays from reaching the Earth**
 - B. To maintain a temperature on Earth sufficient to support life**
 - C. To produce oxygen that benefits living organisms**
 - D. To facilitate the absorption of nutrients in the soil**
- 4. What happens to the carbon and hydrogen in a hydrocarbon during combustion?**
 - A. They remain unchanged**
 - B. They are reduced**
 - C. They are oxidized**
 - D. They form solid carbon**
- 5. Which of the following is produced when phosphate rock is treated with nitric acid?**
 - A. Single superphosphate**
 - B. Triple superphosphate**
 - C. Calcium nitrate and phosphoric acid**
 - D. Ammonium phosphate**

- 6. What is the definition of corrosion?**
- A. The physical wear of materials over time.**
 - B. The destruction of materials due to chemical reactions.**
 - C. The accumulation of dirt on surfaces.**
 - D. The process of heating materials to change their form.**
- 7. Which gas is essential for the process of photosynthesis?**
- A. Hydrogen**
 - B. Nitrogen**
 - C. Carbon Dioxide**
 - D. Oxygen**
- 8. Where are potassium salts sourced for fertilizers?**
- A. From composting organic matter**
 - B. By mining**
 - C. Through chemical synthesis**
 - D. From animal waste**
- 9. What is a key property of low carbon steel when compared to high carbon steel?**
- A. Softer and more easily shaped**
 - B. Harder and more brittle**
 - C. More resistant to rust**
 - D. Higher melting point**
- 10. What common treatment is applied to kill bacteria in drinking water?**
- A. Mechanical filtration**
 - B. Chlorination**
 - C. Freezing**
 - D. Evaporation**

Answers

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

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Explanations

1. Increasing the frequency of collisions in a reaction typically results in what outcome?

- A. A decrease in rate of reaction**
- B. No change in rate of reaction**
- C. An increase in rate of reaction**
- D. A halt in the reaction process**

Increasing the frequency of collisions in a reaction leads to an increase in the rate of reaction because reactions occur when reactant particles collide with sufficient energy and the correct orientation. When the frequency of these collisions rises, there are more opportunities for particles to interact. This enhances the likelihood that effective collisions, those capable of overcoming the activation energy barrier, will occur. As a result, more reactants can be transformed into products in a given timeframe, thereby accelerating the overall reaction rate. When considering the other possible outcomes: a decrease in the rate of reaction would imply that collisions are less effective or less frequent, which does not align with the principle that more collisions generally accelerate reactions. No change in the rate of reaction suggests that collisions do not affect the reaction rate, which contradicts the fundamental chemistry concepts regarding reaction kinetics. Finally, a halt in the reaction process implies that collisions are not occurring at all, which would mean the reaction is effectively stopped, also not consistent with increased collision frequency. Thus, the understanding of reaction kinetics supports that increased collision frequency correlates directly with an enhanced reaction rate.

2. For how long has the proportions of the different gases in the atmosphere remained much the same?

- A. 100 million years**
- B. 200 million years**
- C. 300 million years**
- D. 400 million years**

The proportions of the different gases in the atmosphere have remained relatively stable for approximately 200 million years. This stability is significant because it indicates that, despite various geological and biological changes on Earth, the composition of the atmosphere has not varied dramatically. This consistency is essential for maintaining life as we know it, as the balance of gases like nitrogen, oxygen, and carbon dioxide plays a crucial role in processes such as respiration and photosynthesis. The answer of 200 million years highlights a timescale that encompasses the period during which major events, such as the rise of mammals and the development of modern ecosystems, occurred alongside the atmospheric stability. While the other choices might represent significant geological periods, they either extend too far back in time or do not accurately reflect the timeframe during which we observe the atmosphere's composition as it is today.

3. What is the primary role of greenhouse gases in the atmosphere?
- A. To block harmful UV rays from reaching the Earth
 - B. To maintain a temperature on Earth sufficient to support life**
 - C. To produce oxygen that benefits living organisms
 - D. To facilitate the absorption of nutrients in the soil

The primary role of greenhouse gases in the atmosphere is to maintain a temperature on Earth sufficient to support life. Greenhouse gases, such as carbon dioxide, methane, and water vapor, trap heat from the sun within the Earth's atmosphere. This process, known as the greenhouse effect, is essential for regulating the planet's temperature. Without these gases, heat would escape back into space, leading to much colder conditions that would be inhospitable for most forms of life. This temperature regulation is crucial because it not only supports the survival of organisms but also influences climates, weather patterns, and ecosystems across the planet. By keeping the Earth's surface warm, greenhouse gases play a vital role in creating and sustaining the diverse environments needed for life to flourish.

4. What happens to the carbon and hydrogen in a hydrocarbon during combustion?
- A. They remain unchanged
 - B. They are reduced
 - C. They are oxidized**
 - D. They form solid carbon

During combustion, hydrocarbons react with oxygen to produce carbon dioxide and water. This process involves the combination of the carbon and hydrogen atoms in the hydrocarbon with oxygen atoms from the air. Specifically, the carbon from the hydrocarbon is oxidized to form carbon dioxide, and the hydrogen is also oxidized, forming water. Oxidation is defined as a reaction in which a substance loses electrons. In the case of hydrocarbons, the carbon is transitioning from a lower oxidation state in the hydrocarbon to a higher oxidation state in carbon dioxide. Similarly, the hydrogen goes from a lower oxidation state to a higher state in water. This transformation demonstrates that both carbon and hydrogen undergo oxidation during the combustion process, leading to the release of energy in the form of heat and light. The other options do not accurately describe the chemical changes that occur. For instance, stating that carbon and hydrogen remain unchanged or are reduced does not convey the actual chemical reaction taking place during combustion. Additionally, combustion does not produce solid carbon as a direct result, as the products primarily include gases like carbon dioxide and water vapor. Thus, the correct understanding of combustion is best captured by recognizing the oxidation of carbon and hydrogen.

5. Which of the following is produced when phosphate rock is treated with nitric acid?

- A. Single superphosphate**
- B. Triple superphosphate**
- C. Calcium nitrate and phosphoric acid**
- D. Ammonium phosphate**

When phosphate rock is treated with nitric acid, the reaction primarily produces calcium nitrate and phosphoric acid. The process involves the nitric acid reacting with the phosphate rock, which contains calcium phosphate. The nitric acid dissolves the calcium phosphate, resulting in the formation of phosphoric acid and calcium nitrate. This is a significant chemical reaction in the production of fertilizers, as both the phosphoric acid and the calcium nitrate can be used to enhance soil fertility. The reaction is important in agricultural practices because it provides plants with essential nutrients. Phosphoric acid supplies phosphorus, which is crucial for plant energy transfer, photosynthesis, and overall growth, while calcium nitrate provides both calcium and nitrogen, which are vital to plant health. The other options refer to different processes or products not formed when phosphate rock specifically reacts with nitric acid. Single superphosphate and triple superphosphate are products formed by treating phosphate rock with sulfuric acid rather than nitric acid. Ammonium phosphate is derived from combining ammonium and phosphate sources, which does not occur directly from the reaction of phosphate rock with nitric acid. Thus, the best answer is the production of calcium nitrate and phosphoric acid through this specific chemical reaction.

6. What is the definition of corrosion?

- A. The physical wear of materials over time.**
- B. The destruction of materials due to chemical reactions.**
- C. The accumulation of dirt on surfaces.**
- D. The process of heating materials to change their form.**

Corrosion is defined as the destruction of materials due to chemical reactions, particularly with the environment. This process typically involves the deterioration of metals when they react with moisture, oxygen, acids, or other chemicals in their surroundings, leading to the formation of rust or other corrosion products. For instance, when iron is exposed to oxygen and water, it undergoes an electrochemical reaction that results in the formation of iron oxides, commonly known as rust. Understanding that corrosion primarily involves chemical reactions helps differentiate it from merely physical wear, which is about gradual degradation due to friction or mechanical forces. Accumulation of dirt does not directly impact the material's structural integrity as corrosion does, and heating materials to change their form relates to processes such as melting or forging, rather than a deterioration of material quality over time.

7. Which gas is essential for the process of photosynthesis?

- A. Hydrogen
- B. Nitrogen
- C. Carbon Dioxide**
- D. Oxygen

The essential gas for the process of photosynthesis is carbon dioxide. During photosynthesis, green plants, algae, and some bacteria use sunlight to convert carbon dioxide and water into glucose and oxygen. This process mainly takes place in the chloroplasts of plant cells, where chlorophyll captures the light energy needed for this reaction. Carbon dioxide is absorbed from the atmosphere through small openings in plant leaves called stomata. It is then used in the light-independent reactions, also known as the Calvin cycle, where it is converted into glucose, a form of stored energy that plants use for growth and metabolism. Hydrogen is not directly used as a gas in the photosynthesis process; instead, it comes from water molecules, which are split to provide the necessary electrons and protons. While nitrogen is essential for the overall growth and development of plants, contributing to the formation of amino acids and proteins, it does not play a role in the process of photosynthesis itself. Oxygen, although a product of photosynthesis, is not required for the process to occur; rather, it is released as a byproduct after the conversion of carbon dioxide and water.

8. Where are potassium salts sourced for fertilizers?

- A. From composting organic matter
- B. By mining**
- C. Through chemical synthesis
- D. From animal waste

Potassium salts are primarily sourced for fertilizers through mining. Potassium is an essential nutrient for plants, playing a crucial role in processes such as photosynthesis, nutrient uptake, and overall plant health. The primary source of potassium in fertilizers comes from naturally occurring mineral deposits, which contain potassium compounds. These mineral deposits are extracted through mining processes, allowing for the production of potassium chloride and other potassium-based fertilizers. While composting organic matter, chemical synthesis, and animal waste can contribute nutrients to soil, they do not typically provide the specific potassium salts needed in the same concentrated form or as efficiently as mined sources. Thus, mining stands out as the primary method for obtaining potassium salts used in fertilizers.

9. What is a key property of low carbon steel when compared to high carbon steel?

A. Softer and more easily shaped

B. Harder and more brittle

C. More resistant to rust

D. Higher melting point

Low carbon steel is known for being softer and more easily shaped compared to high carbon steel. This property arises from its lower carbon content, which typically ranges from around 0.05% to 0.25%. The reduced carbon ratio in low carbon steel means that it has a more ductile nature, allowing it to be manipulated and formed into various shapes without cracking or breaking easily. High carbon steel, on the other hand, contains a higher percentage of carbon, usually between 0.60% to 1.5%. This results in increased hardness and brittleness, making it more challenging to shape and manipulate. While high carbon steel is beneficial for applications requiring strength and durability, low carbon steel is preferred in situations where flexibility and ease of fabrication are needed. The other choices do not accurately describe low carbon steel. For instance, high carbon steel's hardness does not lend it to being softer and more easily shaped, nor does low carbon steel have a higher melting point compared to high carbon steel. Additionally, while there are corrosion-resistant steels, low carbon steel does not inherently offer more resistance to rust than high carbon steel, as both can corrode depending on environmental conditions and protective coatings.

10. What common treatment is applied to kill bacteria in drinking water?

A. Mechanical filtration

B. Chlorination

C. Freezing

D. Evaporation

Chlorination is a widely used method for treating drinking water to kill bacteria. This process involves adding chlorine or chlorine compounds to the water, which effectively disinfects it by destroying or inactivating harmful microorganisms, including bacteria, viruses, and protozoa. The chlorine reacts with the cellular structures of these pathogens, leading to their destruction. This method is particularly effective because it provides a residual disinfectant that helps maintain water quality as it travels through pipes to homes and businesses, further protecting against contamination. While mechanical filtration is useful for removing sediments and larger particles from water, it does not inherently kill bacteria. Freezing and evaporation are not viable methods for disinfecting drinking water, as freezing does not eliminate bacteria effectively, and evaporation primarily removes water rather than disinfecting it. Thus, chlorination stands out as the most practical and effective common treatment for ensuring the microbiological safety of drinking water.

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-biologypaper2.examzify.com>

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