ASSESSMENT AND QUALIFICATIONS ALLIANCE (AQA) GCSE CHEMISTRY PAPER 2 PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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.

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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!

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Questions

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1. **What is the word equation for photosynthesis?**

   A. Carbon dioxide + water glucose + oxygen

   B. Carbon dioxide + water glucose + nitrogen

   C. Carbon dioxide + oxygen glucose + water

   D. Glucose + oxygen carbon dioxide + water

2. **Which gas is produced by the reaction of sulfur present in some fuels with oxygen?**

   A. Carbon dioxide

   B. Sulfur dioxide

   C. Ozone

   D. Methane

3. **Desalination is primarily used to provide potable water when what is lacking?**

   A. Groundwater supplies

   B. Freshwater resources

   C. Industrial water

   D. River water

4. **Which type of poly(ethene) would be expected to have a lower density?**

   A. High density poly(ethene)

   B. Low density poly(ethene)

   C. Medium density poly(ethene)

   D. Ultra-high molecular weight poly(ethene)

5. **What compound is classified as an alkane?**

   A. C_2H_4

   B. C_3H_6

   C. C_4H_{10}

   D. C_5H_{12}

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6. How is the term "carbon footprint" best defined?

A. Total greenhouse gas emissions over a lifecycle

B. Only carbon dioxide emitted from vehicles

C. Carbon emissions from industrial processes only

D. Residual carbon in the atmosphere

7. What are the elements primarily found in NPK fertilizers?

A. Iron, Manganese, Zinc

B. Carbon, Hydrogen, Oxygen

C. Nitrogen, Phosphorus, Potassium

D. Sodium, Calcium, Magnesium

8. Why is potable water not considered pure water?

A. Because it is too cold to drink

B. Because it contains dissolved substances

C. Because it is bottled and not sourced from the tap

D. Because it has undergone chemical treatment

9. Which of the following acids has the longest carbon chain among the first four members of the carboxylic acid series?

A. Methanoic acid

B. Propanoic acid

C. Butanoic acid

D. Ethanoic acid

10. What needs to be removed from sewage and agricultural waste water before it is released into the environment?

A. Only organic matter

B. Harmful microbes and excess salts

C. Organic matter, harmful microbes, and fertilizers and pesticides

D. Only harmful microbes

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Answers

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

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Explanations

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1. What is the word equation for photosynthesis?

A. Carbon dioxide + water glucose + oxygen

B. Carbon dioxide + water glucose + nitrogen

C. Carbon dioxide + oxygen glucose + water

D. Glucose + oxygen carbon dioxide + water

The word equation for photosynthesis accurately reflects the fundamental process through which plants convert light energy into chemical energy. In this process, carbon dioxide and water are utilized to produce glucose and oxygen. During photosynthesis, plants absorb carbon dioxide from the atmosphere and water from the soil. In the presence of sunlight, which is captured by chlorophyll in the chloroplasts, these reactants undergo a series of chemical reactions. The result is glucose, which serves as an energy source for the plant, and oxygen, which is released as a byproduct into the atmosphere. This equation highlights two critical aspects: the importance of sunlight in the energy conversion process and the role of plants in contributing to oxygen levels in the environment, showcasing their vital role in the ecosystem. The other options do not accurately depict this essential biological process or involve incorrect reactants and products, making them unsuitable representations of photosynthesis.

2. Which gas is produced by the reaction of sulfur present in some fuels with oxygen?

A. Carbon dioxide

B. Sulfur dioxide

C. Ozone

D. Methane

The gas produced by the reaction of sulfur with oxygen is sulfur dioxide. This occurs during the combustion of fossil fuels that contain sulfur. When sulfur is burned in oxygen, it combines chemically to form sulfur dioxide (SO), which is a colorless gas with a pungent smell. This reaction is significant because sulfur dioxide can contribute to air pollution and the formation of acid rain, which can have harmful effects on the environment and human health. Therefore, understanding the combustion process and its byproducts is essential in chemistry, particularly in discussions around energy production and environmental impact. The other gases listed are not produced in this specific reaction. Carbon dioxide is a product of the combustion of carbon-based fuels but does not involve sulfur. Ozone is a different molecule found in the atmosphere and is not formed from the sulfur-oxygen reaction. Methane, a hydrocarbon gas, is produced from organic materials and is not related to the combustion of sulfur in fuels.

3. Desalination is primarily used to provide potable water when what is lacking?

A. Groundwater supplies

B. Freshwater resources

C. Industrial water

D. River water

Desalination is primarily employed to offer potable water when freshwater resources are inadequate. This process is critical in regions where traditional sources of drinking water, such as rivers, lakes, and aquifers, are scarce or contaminated. Desalination converts seawater or brackish water into fresh, drinkable water, making it a valuable solution in areas experiencing drought or having limited freshwater infrastructure. While options like groundwater supplies, industrial water, and river water can also be important for various functions, they do not address the broader issue of overall freshwater scarcity in the context of drinking water availability. Therefore, the focus on freshwater resources encompasses the overarching challenge that desalination aims to address.

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4. Which type of poly(ethene) would be expected to have a lower density?

A. High density poly(ethene)

B. Low density poly(ethene)

C. Medium density poly(ethene)

D. Ultra-high molecular weight poly(ethene)

Low density poly(ethene) is expected to have a lower density because of its molecular structure and how the polymer chains are arranged. In low density poly(ethene), the polymer chains are more branched, which leads to a less compact arrangement. These branches prevent the molecules from packing closely together, resulting in lower density. This structure also contributes to other properties such as increased flexibility and lower tensile strength compared to high density poly(ethene), which has a more linear structure that allows for closer packing of the chains and thus a higher density. On the other hand, high density poly(ethene) gathers its density from the tightly packed arrangement of its linear polymer chains, leading to a more rigid form. Furthermore, the medium density poly(ethene) and ultra-high molecular weight poly(ethene) do not generally fall under the category of having greatly reduced density compared to low density poly(ethene). Medium density poly(ethene) features a combination of characteristics from both high and low density variations but does not provide the same level of decreased density as the low density variant. Ultra-high molecular weight poly(ethene) is known for its exceptional strength and robustness, resulting from long-chain structures, but still retains higher density compared

5. What compound is classified as an alkane?

A. C2H4

B. C3H6

C. C4H10

D. C5H12

Alkanes are a specific type of hydrocarbon characterized by having only single bonds between carbon atoms, and they follow the general formula CnH2n+2, where n represents the number of carbon atoms. In this case, the compound C4H10 fits perfectly into the alkane category. Here, if we substitute n with 4 (since there are 4 carbon atoms), we calculate the hydrogen atoms as follows: 2(4) + 2, which equals 10. Thus, C4H10 conforms to the alkane formula, demonstrating its classification as a saturated hydrocarbon with no double or triple bonds. The other compounds listed do not fulfill the criteria for alkanes due to the presence of double bonds or an insufficient number of hydrogen atoms as per the alkane formula. For instance, C2H4 (ethylene) and C3H6 (propene) both contain double bonds, while C5H12, despite having the correct number of hydrogens for being an alkane, represents a higher hydrocarbon in the series rather than fulfilling the question's requirement to select the lowest alkane. Thus, while C5H12 is indeed an alkane, the correct choice in the context

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6. How is the term "carbon footprint" best defined?

A. Total greenhouse gas emissions over a lifecycle

B. Only carbon dioxide emitted from vehicles

C. Carbon emissions from industrial processes only

D. Residual carbon in the atmosphere

The term "carbon footprint" is best defined as the total greenhouse gas emissions over a lifecycle. This comprehensive definition encompasses all activities that contribute to greenhouse gas emissions, including the extraction, production, transportation, use, and disposal of products and services. It accounts for all greenhouse gases, not just carbon dioxide, and reflects the cumulative impact of human activity on the planet's climate. By focusing solely on total emissions throughout the lifecycle, this definition allows for a clearer understanding of how various factors contribute to climate change. It also highlights the importance of considering emissions from all sources, as many activities, including energy production, agriculture, and waste management, contribute significantly to an individual's or organization's overall carbon footprint.

7. What are the elements primarily found in NPK fertilizers?

A. Iron, Manganese, Zinc

B. Carbon, Hydrogen, Oxygen

C. Nitrogen, Phosphorus, Potassium

D. Sodium, Calcium, Magnesium

NPK fertilizers are specifically designed to provide essential nutrients that plants require for healthy growth. The acronym NPK stands for nitrogen (N), phosphorus (P), and potassium (K), which are the three primary nutrients commonly found in these fertilizers. Nitrogen is crucial for plant growth as it is a key component of amino acids, proteins, and chlorophyll, the molecule responsible for photosynthesis. Phosphorus plays a vital role in energy transfer and is an integral part of DNA and RNA, as well as being important for root development and flowering. Potassium is essential for regulating various physiological processes in plants, including water uptake and enzyme activity. The other options represent elements that do not align with the primary functions of NPK fertilizers. For example, while iron, manganese, and zinc are essential trace elements for plants, they are not the main components that define NPK fertilizers. Carbon, hydrogen, and oxygen are fundamental elements present in all organic compounds but are not specifically associated with NPK fertilizers. Lastly, sodium, calcium, and magnesium are also important for plant health but are categorized differently and do not constitute the primary nutrients represented by the term NPK.

8. Why is potable water not considered pure water?

A. Because it is too cold to drink

B. Because it contains dissolved substances

C. Because it is bottled and not sourced from the tap

D. Because it has undergone chemical treatment

Potable water is defined as water that is safe for human consumption, but it is not considered pure water because it contains dissolved substances such as minerals, salts, and other impurities that can come from natural sources, treatment processes, or the environment. Pure water would refer to H2O in its most unadulterated form, without any other substances present. Even though these dissolved substances in potable water are generally harmless or beneficial, they prevent it from being classified as "pure." The other options suggest reasons that do not accurately reflect the definition of potable water. For instance, temperature does not influence whether water can be classified as pure or potable, nor does the source of the water, such as tap or bottled, inherently determine its purity. Also, while potable water can undergo chemical treatment, it is not the treatment itself that negates its classification as pure. Instead, it is the presence of dissolved substances that makes potable water a mixture rather than a pure compound.

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9. Which of the following acids has the longest carbon chain among the first four members of the carboxylic acid series?

A. Methanoic acid

B. Propanoic acid

C. Butanoic acid

D. Ethanoic acid

The correct choice highlights that butanoic acid has the longest carbon chain among the first four members of the carboxylic acid series. Carboxylic acids are organic compounds that contain a carboxyl functional group (-COOH) and are categorized based on the length of their carbon chains. Methanoic acid, also known as formic acid, contains one carbon atom. Ethanoic acid, or acetic acid, has two carbon atoms. Propanoic acid, or propionic acid, consists of three carbon atoms. Butanoic acid, on the other hand, features four carbon atoms in its chain. Therefore, when comparing the length of the carbon chain in each of these acids, butanoic acid stands out as it has the most significant number of carbon atoms, indicating it has the longest carbon chain among the options provided.

10. What needs to be removed from sewage and agricultural waste water before it is released into the environment?

A. Only organic matter

B. Harmful microbes and excess salts

C. Organic matter, harmful microbes, and fertilizers and pesticides

D. Only harmful microbes

To ensure that sewage and agricultural wastewater do not negatively impact the environment upon release, several harmful substances must be removed. The correct answer emphasizes the need to eliminate organic matter, harmful microbes, and fertilizers and pesticides from the wastewater. Organic matter is crucial to remove as it can lead to oxygen depletion in water bodies, adversely affecting aquatic life. When organic waste decomposes, it consumes dissolved oxygen needed by fish and other organisms, resulting in an unhealthy ecosystem. Harmful microbes, including pathogens that can cause diseases in humans and animals, must also be treated adequately. If these microbes remain in the wastewater, they can contaminate drinking water sources and recreational waters, posing serious public health risks. Fertilizers and pesticides are another important concern. When released into the environment, they can lead to nutrient pollution, causing issues like eutrophication. This process results in excessive algae growth that can deplete oxygen in the water, further harming aquatic ecosystems. Therefore, the comprehensive removal of organic matter, harmful microbes, and agricultural chemicals is essential to safeguard both environmental health and public safety before wastewater is discharged into natural water sources.

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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-chemistrypaper2.examzify.com

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

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