

# Assessment and Qualifications Alliance (AQA) GCSE Chemistry Paper 1 Practice Exam (Sample)

## Study Guide



**Everything you need from our exam experts!**

**This is a sample study guide. To access the full version with hundreds of questions,**

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# Table of Contents

<b>Copyright</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>How to Use This Guide</b> .....	<b>4</b>
<b>Questions</b> .....	<b>6</b>
<b>Answers</b> .....	<b>9</b>
<b>Explanations</b> .....	<b>11</b>
<b>Next Steps</b> .....	<b>17</b>

# 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!**

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## Questions

- 1. In terms of function, what is the role of a voltmeter in an electrochemical cell setup?**
  - A. To measure the temperature**
  - B. To measure the voltage produced**
  - C. To store the electric charge**
  - D. To assess the quality of the electrodes**
- 2. What type of bonds hold the atoms in giant covalent structures together?**
  - A. Ionic bonds**
  - B. Metallic bonds**
  - C. Covalent bonds**
  - D. Hydrogen bonds**
- 3. Why is the structure of graphite significant for its properties?**
  - A. It allows for high tensile strength**
  - B. It creates a solid, non-conductive material**
  - C. It enables layers to slide easily over one another**
  - D. It limits the delocalisation of electrons**
- 4. What is the structure of a polymer?**
  - A. A single atom arrangement**
  - B. A network of ionic bonds**
  - C. Long chains of repeating units**
  - D. Small clusters of molecules**
- 5. Which of the following are states of matter?**
  - A. Solid, liquid, and vapor**
  - B. Solid, liquid, and gas**
  - C. Solid, liquid, and mist**
  - D. Solid, liquid, and plasma**



6. The mass of one mole of atoms of a substance is equal to what?
- A. The total number of atoms in the substance
  - B. The relative atomic mass of the substance
  - C. The relative formula mass of the substance
  - D. The molecular weight of the compound
7. Which of the following best describes an electrolyte?
- A. A solid that contains ions
  - B. A liquid that contains ions
  - C. A gas that reacts with electrodes
  - D. A compound that conducts electricity in vapor form
8. What is the size range of coarse particles?
- A. 1 nm to 100 nm
  - B. 100 nm to 2,500 nm
  - C. 2,500 nm to 10,000 nm
  - D. 10,000 nm to 1  $\mu\text{m}$
9. What is the equation used to calculate concentration in  $\text{mol/dm}^3$ ?
- A.  $\text{Concentration} = \text{Number of moles of solvent} / \text{Volume of solute}$
  - B.  $\text{Concentration} = \text{Number of moles of solute} / \text{Volume of solvent}$
  - C.  $\text{Concentration} = \text{Volume of solute} / \text{Number of moles of solute}$
  - D.  $\text{Concentration} = \text{Mass of solute} / \text{Volume of solvent}$
10. In the context of chemical reactions, what is a limiting reactant?
- A. The reactant that is present in excess
  - B. The reactant that produces the least amount of product
  - C. The reactant that is used up first during the reaction
  - D. The reactant that affects the temperature of the reaction

## **Answers**

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

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## **Explanations**

**1. In terms of function, what is the role of a voltmeter in an electrochemical cell setup?**

- A. To measure the temperature**
- B. To measure the voltage produced**
- C. To store the electric charge**
- D. To assess the quality of the electrodes**

The role of a voltmeter in an electrochemical cell setup is to measure the voltage produced by the cell. This voltage indicates the potential difference between the electrodes, which is a direct reflection of the cell's ability to generate electrical energy from the chemical reactions occurring within it. A voltmeter is specifically designed for this purpose, providing an accurate reading of the electrical potential. This measurement is crucial for understanding the efficiency of the electrochemical processes taking place, as well as for comparing the performance of different cells or configurations. The other options relate to functions that a voltmeter does not perform. Measuring temperature is typically done by a thermometer, storing electric charge involves components like capacitors or batteries, and assessing the quality of electrodes would require a different kind of evaluation, possibly involving physical inspection or specialized equipment.

**2. What type of bonds hold the atoms in giant covalent structures together?**

- A. Ionic bonds**
- B. Metallic bonds**
- C. Covalent bonds**
- D. Hydrogen bonds**

In giant covalent structures, the atoms are held together by covalent bonds, which are formed when pairs of electrons are shared between atoms. This type of bonding creates a robust three-dimensional network that extends throughout the entire structure, ensuring that the atoms are tightly bound to each other. This extensive network of covalent bonds contributes to several characteristics of giant covalent structures, such as high melting and boiling points, hardness, and the inability to conduct electricity (with the exception of graphite). Each atom in the structure is bonded to several others, which differentiates it from simpler molecules or compounds in which only a few atoms are involved. Other types of bonds mentioned, such as ionic, metallic, or hydrogen bonds, play significant roles in different types of compounds but are not relevant to giant covalent structures. Ionic bonds involve the electrostatic attraction between oppositely charged ions, metallic bonds involve a shared pool of electrons among metal atoms, and hydrogen bonds are weak attractions between polar molecules. Understanding the nature of covalent bonding in these structures is essential for grasping their unique properties and behaviors.

### 3. Why is the structure of graphite significant for its properties?

- A. It allows for high tensile strength
- B. It creates a solid, non-conductive material
- C. It enables layers to slide easily over one another**
- D. It limits the delocalisation of electrons

The significance of graphite's structure lies in the way its atoms are arranged, specifically in layers of carbon atoms bonded together in a two-dimensional hexagonal lattice. Each layer consists of carbon atoms bonded to three other carbon atoms through strong covalent bonds, while the fourth outer electron is delocalized. This delocalization allows the electrons to move freely across the layers. The layers are held together by weaker van der Waals forces, which means they can easily slide over one another. This characteristic makes graphite useful as a lubricating material and allows it to be used in applications such as pencils, where the ability to slide easily is essential for leaving marks on paper. The other options do not correctly represent the properties that arise from graphite's structure. While graphite does have high tensile strength due to the strong covalent bonds within the layers, it is the layered structure that primarily enables its unique sliding property. Graphite is also a good conductor of electricity because of the delocalized electrons, contradicting the idea that it creates a non-conductive material. Furthermore, the delocalised electrons are a key feature of graphite's ability to conduct electricity; therefore, limiting this delocalisation would not align with graphite's known properties.

### 4. What is the structure of a polymer?

- A. A single atom arrangement
- B. A network of ionic bonds
- C. Long chains of repeating units**
- D. Small clusters of molecules

The structure of a polymer consists of long chains of repeating units called monomers. These chains can vary in length and complexity, forming a macromolecule that possesses unique properties. The repeating units in a polymer are covalently bonded together, which allows for the creation of flexible, durable materials. This structure is fundamental to many substances we encounter daily, such as plastics, rubbers, and fibers, which all exemplify the versatility and functionality of polymers. The arrangement of these long chains contributes to the physical properties of the polymer, such as strength, elasticity, and resistance to chemicals.

**5. Which of the following are states of matter?**

- A. Solid, liquid, and vapor
- B. Solid, liquid, and gas**
- C. Solid, liquid, and mist
- D. Solid, liquid, and plasma

The correct answer, which identifies the states of matter, includes solid, liquid, and gas. In chemistry, matter exists in several distinct states, with the three most commonly recognized being solid, liquid, and gas. Solids have a definite shape and volume because their particles are closely packed together in a fixed arrangement. Liquids have a definite volume but take the shape of their container because the particles are close together but can move past one another. Gases have neither a definite shape nor a definite volume, as their particles are far apart and move freely, filling the available space. While "vapor" and "plasma" are related terms, they do not replace the fundamental identification of states of matter. Vapor is often a term used to describe a gas that is in equilibrium with its liquid or solid phase, and plasma refers to a state of matter found at very high temperatures where atoms lose their electrons. "Mist" is a colloquial term that doesn't represent a fundamental state of matter but rather describes tiny droplets of liquid suspended in the air. Therefore, recognizing solid, liquid, and gas as the primary states of matter aligns with the scientific understanding of how substances behave under different conditions.

**6. The mass of one mole of atoms of a substance is equal to what?**

- A. The total number of atoms in the substance
- B. The relative atomic mass of the substance
- C. The relative formula mass of the substance**
- D. The molecular weight of the compound

The mass of one mole of atoms of a substance is equal to the relative atomic mass of the substance expressed in grams. The correct answer reflects a fundamental concept in chemistry where the relative atomic mass is numerically equivalent to the mass of one mole of that element in grams. For example, if the relative atomic mass of carbon is 12, then one mole of carbon atoms weighs 12 grams. This relationship is a cornerstone of stoichiometry in chemistry, allowing scientists to convert between the number of moles and the mass of a substance in practical applications. In contrast, the total number of atoms in the substance does not provide a mass measurement, while the relative formula mass typically refers to compounds consisting of more than one type of atom. Molecular weight can be used interchangeably with relative molecular mass in some contexts, but it is generally less precise and is often used for molecular compounds rather than atomic substances. Hence, recognizing the correct relationship between moles, mass, and atomic mass is crucial for understanding many chemical principles.

**7. Which of the following best describes an electrolyte?**

- A. A solid that contains ions**
- B. A liquid that contains ions**
- C. A gas that reacts with electrodes**
- D. A compound that conducts electricity in vapor form**

The best description of an electrolyte is a liquid that contains ions. Electrolytes are substances that dissociate into ions when dissolved in a solvent, typically water. This ionic dissociation allows the solution to conduct electricity. Common examples of electrolytes include salt solutions, such as sodium chloride in water. When it comes to the other choices, a solid containing ions does not necessarily conduct electricity unless it is melted or dissolved to allow the ions to move freely. Gases that react with electrodes do not typically represent the behavior expected of electrolytes, as conductivity is primarily associated with liquid or molten states. Lastly, a compound that conducts electricity in vapor form is not an accurate description of electrolytes, as gases generally do not conduct electricity in the same way that liquids do. Therefore, the distinguishing feature of an electrolyte being a liquid containing ions highlights its ability to facilitate electrical conduction effectively.

**8. What is the size range of coarse particles?**

- A. 1 nm to 100 nm**
- B. 100 nm to 2,500 nm**
- C. 2,500 nm to 10,000 nm**
- D. 10,000 nm to 1  $\mu\text{m}$**

The correct choice reflects the size range of coarse particles as typically defined within the context of particle classification in chemistry. Coarse particles are understood to be larger than fine particles, which typically range from 100 nm to 2,500 nm. When categorizing particulates, those that are classified as coarse often fall within the range of 2,500 nm to 10,000 nm. This encompasses larger dust or aerosol particles that can influence properties such as deposition in the respiratory system and other physical behaviors in different environments. As for the other options, the range of 1 nm to 100 nm reflects nanoparticles, which are significantly smaller and exhibit different physical and chemical properties. The range of 10,000 nm to 1  $\mu\text{m}$  is also a different classification, since 1 micron (or  $\mu\text{m}$ ) is equivalent to 1,000 nm, thus this option does not align with the standard definition of coarse particles. Understanding these distinctions is important for applications across various scientific fields, including environmental science and materials science.



**9. What is the equation used to calculate concentration in mol/dm<sup>3</sup>?**

**A. Concentration = Number of moles of solvent / Volume of solute**

**B. Concentration = Number of moles of solute / Volume of solvent**

**C. Concentration = Volume of solute / Number of moles of solute**

**D. Concentration = Mass of solute / Volume of solvent**

The correct answer defines concentration in terms of the number of moles of solute and the volume of the solvent. Concentration is a measure of how much solute is present in a given volume of solution, typically expressed in moles per cubic decimeter (mol/dm<sup>3</sup>). In this context, the term "solute" refers to the substance that is dissolved (for example, salt in water), while "solvent" refers to the medium in which the solute is dissolved (in this case, typically water). The equation indicates that the concentration increases as either the number of moles of solute increases or when the volume of the solvent decreases, as both factors directly affect how concentrated the solution will be. Understanding this relationship is crucial for various applications in chemistry, such as preparing solutions of desired concentrations for experiments or reactions. The other provided options do not accurately represent the correct relationship for determining concentration in the context of chemistry.

**10. In the context of chemical reactions, what is a limiting reactant?**

**A. The reactant that is present in excess**

**B. The reactant that produces the least amount of product**

**C. The reactant that is used up first during the reaction**

**D. The reactant that affects the temperature of the reaction**

In a chemical reaction, a limiting reactant is defined as the reactant that is completely consumed first, limiting the amount of product that can be formed. When one reactant is used up, the reaction cannot continue, even if other reactants are still available in excess. This makes the limiting reactant crucial for determining the theoretical yield of the products, as it directly controls the rate at which the reaction proceeds. Choosing the correct reactant as limiting ensures accurate calculations regarding how much product can be produced from the given amounts of reactants. This concept is fundamental to stoichiometry in chemistry, allowing chemists to predict and measure the outcomes of chemical reactions efficiently. Understanding this helps in various applications, such as optimizing reactant usage in industrial processes or laboratory experiments.

## 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://aqa-gcse-chemistrypaper1.examzify.com>**

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