

IGCSE SCIENCE PAPER 6 PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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THE FULL VERSION STUDY GUIDE**

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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

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- 1. What color change occurs for hydrated copper sulfate upon heating?**
 - A. Blue to white
 - B. White to blue
 - C. Blue to green
 - D. Green to blue

- 2. Aluminum ions treated with aqueous ammonia produce which observation?**
 - A. White ppt soluble in excess
 - B. White ppt insoluble in excess
 - C. No ppt
 - D. Green ppt

- 3. In chromatography, why is a locating agent used when amino acids are studied?**
 - A. To detect colorless amino acids
 - B. To speed up the process
 - C. To change pH
 - D. To dry the sample

- 4. A Liebig condenser is used in which process?**
 - A. Distillation
 - B. Filtration
 - C. Crystallization
 - D. Precipitation

- 5. What is a locating agent?**
 - A. A chemical sprayed on chromatograms to reveal colourless substances
 - B. A solvent for chromatography
 - C. A catalyst for reactions
 - D. A reagent that speeds up chromatography

- 6. What gas is produced when nitrate ions are treated with sodium hydroxide, aluminum foil and warm?**
- A. Ammonia produced.
 - B. Hydrogen produced.
 - C. Oxygen produced.
 - D. Nitrogen gas produced.
- 7. What is necessary for rusting to occur?**
- A. Water (humidity) and oxygen (air)
 - B. Heat and nitrogen
 - C. Only water
 - D. Only oxygen
- 8. What is the general purpose of a condenser in a distillation setup?**
- A. To condense steam back into liquid water
 - B. To heat the mixture
 - C. To measure volume
 - D. To filter solids
- 9. What is necessary for rusting?**
- A. Water (humidity) and oxygen (air).
 - B. Heat and sunlight.
 - C. Only water.
 - D. Only oxygen.
- 10. Why are water baths recommended when heating flammable liquids such as alcohol?**
- A. To prevent fire by providing a gentle, uniform heat
 - B. To increase the reaction rate
 - C. To dry the liquid
 - D. To raise the boiling point of water

Answers

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

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Explanations

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1. What color change occurs for hydrated copper sulfate upon heating?

A. Blue to white

B. White to blue

C. Blue to green

D. Green to blue

Hydrated copper sulfate is blue because the water molecules coordinated to the copper ions affect how light is absorbed. When you heat it, the water of crystallization is driven off, leaving the anhydrous form, which is white. So the observed change is blue to white as the compound becomes white without its water ligands. If you heat it much more, it can decompose further to copper oxide (which is black), but the standard drying observation is blue turning to white.

2. Aluminum ions treated with aqueous ammonia produce which observation?

A. White ppt soluble in excess

B. White ppt insoluble in excess

C. No ppt

D. Green ppt

When you add a weak base like aqueous ammonia to a solution containing aluminum ions, aluminum hydroxide forms. This hydroxide is a white, gelatinous solid. Aluminum hydroxide can dissolve in strong bases to form a soluble aluminate complex, but ammonia is not strong enough to push that dissolution under ordinary conditions. So you end up with a white precipitate that does not dissolve in excess ammonia. Aluminum compounds aren't green, and there is indeed a precipitate, so the observations described fit the white, insoluble precipitate.

3. In chromatography, why is a locating agent used when amino acids are studied?

A. To detect colorless amino acids

B. To speed up the process

C. To change pH

D. To dry the sample

In chromatography, you need to be able to see where the separated amino acids have moved, and many amino acids are colorless on the plate. A locating agent reacts with the amino acids to produce visible colors, so each spot becomes easy to detect and measure. For example, ninhydrin reacts with amino groups to give a purple color, revealing where each amino acid is. This visualization is essential for determining how far each compound traveled (Rf values) and for identifying them. The locating agent isn't about speeding up the separation, changing the pH, or drying the sample. It's specifically for making the colorless amino acids visible after they've been separated.

4. A Liebig condenser is used in which process?

- A. Distillation
- B. Filtration
- C. Crystallization
- D. Precipitation

Distillation relies on turning a liquid into vapor and then back into liquid so components can be separated by their boiling points. A Liebig condenser provides the cooling needed to turn the vapor back into liquid. Its straight inner tube carries the hot vapor, while the surrounding water jacket keeps the outer surface cool. The vapor condenses on the cooled surface and drips down into the collecting flask, preventing loss of vapor and giving you the distillate. Filtration, crystallization, and precipitation don't involve condensing vapour, so they don't use a condenser in the same way.

5. What is a locating agent?

- A. A chemical sprayed on chromatograms to reveal colourless substances
- B. A solvent for chromatography
- C. A catalyst for reactions
- D. A reagent that speeds up chromatography

A locating agent is a chemical used to reveal colourless spots on a chromatogram after development. Many substances that are separated in chromatography don't have any color, so they're invisible under normal light. Spraying or dipping the plate with a locating agent causes those spots to develop a visible colour (or fluorescence), allowing you to see and compare the different components. This is why it's the best answer: the purpose of a locating agent is specifically visualization, not movement or speeding up the process. A solvent helps move substances through the stationary phase to achieve separation, but it doesn't make colourless spots visible. A catalyst speeds up a chemical reaction, which is not the role here. A reagent that speeds up chromatography would imply accelerating the separation itself, which isn't what a locating agent does.

6. What gas is produced when nitrate ions are treated with sodium hydroxide, aluminum foil and warm?

- A. Ammonia produced.
- B. Hydrogen produced.
- C. Oxygen produced.
- D. Nitrogen gas produced.

This question hinges on redox chemistry in strongly basic, heated conditions with aluminum as the reducing agent. When nitrate ions are treated with hot sodium hydroxide in the presence of aluminum foil, the aluminum donates electrons and reduces the nitrate to ammonia. The alkaline medium, created by the sodium hydroxide, helps drive this reduction and supplies the hydroxide environment that stabilizes the reaction, while water provides hydrogen to form NH_3 . The heat speeds the reaction, making it observable as a gas release. So the gas produced is ammonia.

7. What is necessary for rusting to occur?

A. Water (humidity) and oxygen (air)

B. Heat and nitrogen

C. Only water

D. Only oxygen

Rusting is corrosion that happens when iron reacts with oxygen in the presence of water. The water layer on the metal acts as an electrolyte, allowing ions to move and electrons to transfer from iron to oxygen. Oxygen is the oxidizing agent, so it accepts electrons from iron and, with the help of water, iron forms hydrated iron oxide—rust. Without both components, rusting doesn't proceed: dry oxygen alone won't drive the reaction efficiently, and water alone won't produce rust without oxygen. Heat isn't required for rust to occur, and nitrogen isn't involved. That's why humid air, which provides both water and oxygen, is necessary for rusting to happen.

8. What is the general purpose of a condenser in a distillation setup?

A. To condense steam back into liquid water

B. To heat the mixture

C. To measure volume

D. To filter solids

The condenser's job in distillation is to turn the vapor back into a liquid so it can be collected as the distillate. When the mixture is heated, the component with the lower boiling point becomes vapor and rises into the condenser. There, a cooling flow lowers the vapor's energy and it condenses into liquid, which drips into a receiving flask. This prevents loss of product as vapor and helps separate components by their boiling points. It isn't used to heat the mixture, measure volume, or filter solids.

9. What is necessary for rusting?

A. Water (humidity) and oxygen (air).

B. Heat and sunlight.

C. Only water.

D. Only oxygen.

Rusting happens when iron reacts with oxygen in the presence of water. Water provides the medium that allows ions to move, so it acts as an electrolyte, letting the iron lose electrons and oxygen to gain them. Without water, the reaction still needs a way for ions to move, so rust doesn't form readily; without oxygen there's nothing to oxidize. That's why both water (humidity) and oxygen are required for rust to occur. Heat and sunlight aren't necessary for rust, though they can speed it up; in dry conditions rust forms far more slowly.

10. Why are water baths recommended when heating flammable liquids such as alcohol?

A. To prevent fire by providing a gentle, uniform heat

B. To increase the reaction rate

C. To dry the liquid

D. To raise the boiling point of water

Heating flammable liquids must be controlled so they don't reach temperatures where their vapors could ignite. A water bath helps with that by acting as a large, stable heat reservoir. Water can absorb a lot of energy without a big rise in temperature, so it delivers gentle, uniform heat to the container. This reduces temperature differences inside the liquid and prevents hot spots or rapid boiling that could produce vapors. Direct heating or a flame can create uneven heating and spark ignition, but a water bath keeps the liquid warming slowly and safely, since water itself doesn't burn. So the main reason is safety: the water bath provides calm, even heating that minimizes the chance of fire.

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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://igcsesciencepaper6.examzify.com>

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

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