Cambridge Science – States of Matter Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Table of Contents

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. Which state changes involve energy being absorbed?

A. Freezing and condensation.

B. Deposition and condensation.

C. Boiling and freezing.

D. Melting and sublimation.

2. Which factor increases the rate at which a liquid boils besides external pressure?

A. Larger surface area

B. Higher impurities

C. Lower heat input

D. Slower agitation

3. State a simple experiment to observe melting and boiling points.

A. Use a thermometer to measure the temperature as ice melts at 0°C and water boils at 100°C, recording the temperatures during the changes.

B. Use a thermometer to measure the color change as a substance is heated.

C. Heat ice to observe melting at 0°C, then heat water to observe boiling at 100°C, recording temperatures during changes.

D. Heat a substance until it forms crystals and note the temperature.

4. Which term means any form of water that falls from clouds and reaches the Earth's surface?

A. surface run-off

B. open water

C. precipitation

D. atoms

5. Which statement best describes the purpose of a melting/boiling point experiment?

A. To measure the color changes during heating.

B. To determine the rate of heat transfer.

C. To determine the exact temperatures at which phase changes occur.

D. To calibrate the thermometer.

6. How can you measure the melting point of a solid in a classroom?

A. Gradually heat a solid and record the temperature at which it changes to a liquid.

B. Boil the solid and record the boiling point.

C. Cool a liquid until it freezes.

D. Dissolve the solid in water and measure conductivity.

7. Which of the following substances is in the gaseous state under standard conditions?

A. Water

B. Mercury

C. Helium

D. Ice

8. To flow is to?

A. Pour

B. Flow

C. Liquefy

D. Drizzle

9. Heating affects particles in solids, liquids, and gases by what general effect?

A. All states gain more kinetic energy and movement

B. Only solids increase movement

C. Only gases move faster

D. Particles stop moving

10. An instrument used to measure temperature.

A. Barometer

B. Thermometer

C. Hygrometer

D. Calorimeter

Answers

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

Explanations

1. Which state changes involve energy being absorbed?

A. Freezing and condensation.

B. Deposition and condensation.

C. Boiling and freezing.

D. Melting and sublimation.

Energy is absorbed whenever a substance moves to a higher-energy, less-ordered state. Melting, the change from solid to liquid, requires heat to break apart the rigid solid structure. Sublimation, solid to gas, needs even more energy to completely overcome intermolecular forces and disperse molecules into the gas phase. Both of these transitions are endothermic, so they involve taking in energy, which is why melting and sublimation is the correct pairing. In contrast, freezing and condensation release energy as the substance becomes more ordered (solid from liquid, liquid from gas). Deposition and condensation also release energy (gas to solid and gas to liquid). Boiling does absorb energy, but when paired with freezing, the set includes one that releases energy, so it's not consistent with the idea of "energy being absorbed" for the whole change.

2. Which factor increases the rate at which a liquid boils besides external pressure?

A. Larger surface area

B. Higher impurities

C. Lower heat input

D. Slower agitation

The key idea is how fast energy can get into the liquid. Boiling happens when the liquid gains enough energy to change into vapor, so the rate at which heat is transferred to the liquid controls how quickly boiling occurs. A larger surface area provides more contact with the heat source, so heat can flow into the liquid more quickly. With heat coming in faster, the liquid reaches its boiling point sooner and boils more rapidly, creating bubbles more quickly. The other factors don't inherently speed up this heat transfer. Higher impurities can alter boiling behavior and often raise the boiling point, which doesn't help boiling speed. Lower heat input obviously slows energy delivery, and slower agitation reduces convective heat transfer, also slowing boiling.

3. State a simple experiment to observe melting and boiling points.

A. Use a thermometer to measure the temperature as ice melts at 0°C and water boils at 100°C, recording the temperatures during the changes.

B. Use a thermometer to measure the color change as a substance is heated.

C. Heat ice to observe melting at 0°C, then heat water to observe boiling at 100°C, recording temperatures during changes.

D. Heat a substance until it forms crystals and note the temperature.

Melting and boiling points are the temperatures at which a pure substance changes phase at a given pressure, so a simple way to see them is to watch a sample as you heat it and measure temperature continuously. Start with ice and use a thermometer. As you add heat, the ice will melt at about 0°C, and the temperature will stay around 0°C while the solid becomes liquid. Once everything is melted, the temperature will rise again until it reaches about 100°C, at which point the liquid starts to boil and the temperature stays near 100°C as it changes to steam. Recording the temperatures during these changes gives you clear observed values for both the melting point and the boiling point. This is why the described experiment—heating ice to observe melting at 0°C, then heating the water to observe boiling at 100°C, with temperatures recorded during the changes—is the best simple demonstration.

4. Which term means any form of water that falls from clouds and reaches the Earth's surface?

A. surface run-off

B. open water

C. precipitation

D. atoms

Precipitation is the part of the water cycle where condensed water in clouds becomes heavy enough to fall to the surface. All forms of water that reach the ground—rain, snow, sleet, and hail—are considered precipitation. This is different from surface run-off, which is water that flows over the land after falling, and from open water, which refers to existing bodies of water; atoms are not related to this atmospheric process.

5. Which statement best describes the purpose of a melting/boiling point experiment?

A. To measure the color changes during heating.

B. To determine the rate of heat transfer.

C. To determine the exact temperatures at which phase changes occur.

D. To calibrate the thermometer.

Melting and boiling point experiments focus on pinpointing the temperatures where a substance changes from solid to liquid and from liquid to gas. As you heat a sample, the temperature rises until the solid melts; during the melting process, the temperature stays nearly constant, revealing the melting temperature (for a pure substance this is a sharp value). Similarly, once the liquid reaches its boiling point, the temperature plateaus while vaporization occurs, giving the boiling temperature. This information helps identify substances and assess purity, since impurities tend to broaden the melting range and can alter boiling behavior. The other choices miss the core purpose: color changes aren't a reliable indicator of phase change, the rate of heat transfer isn't what the test aims to measure, and thermometer calibration is a separate preparatory step rather than the main goal.

6. How can you measure the melting point of a solid in a classroom?

A. Gradually heat a solid and record the temperature at which it changes to a liquid.

B. Boil the solid and record the boiling point.

C. Cool a liquid until it freezes.

D. Dissolve the solid in water and measure conductivity.

Melting point is the temperature at which a solid becomes a liquid. To measure it in class, heat a small sample slowly and in small temperature steps, recording the temperature as soon as the solid begins to flow and, ideally, when it has completely turned into liquid. For a pure substance, melting occurs at a single sharp temperature; impurities usually create a melting range. A common classroom method uses a tiny sample in a capillary tube on a hot stage with a thermometer, but any careful gradual heating works. This approach is about melting, not boiling a solid—which isn't how melting is defined for most solids—nor about cooling a liquid to freeze or dissolving a solid in water and measuring conductivity, which relate to freezing or solubility, not melting.

7. Which of the following substances is in the gaseous state under standard conditions?

A. Water

B. Mercury

C. Helium

D. Ice

At standard conditions, a substance's state depends on whether its phase change temperatures sit above or below 25°C and 1 atm. Helium has a boiling point of about -269°C, which is far below room temperature. That means, at 25°C and 1 atm, helium exists as a gas. Water, at 25°C, is liquid because its boiling point is 100°C and its melting point is 0°C. Ice is solid below 0°C, so at standard conditions it's not a gas. Mercury becomes a liquid at room temperature since its melting point is about -39°C and its boiling point is about 357°C. Thus, the substance in the gaseous state under standard conditions is helium.

8. To flow is to?

A. Pour

B. Flow

C. Liquefy

D. Drizzle

Flow describes the way liquids move, especially under gravity and around obstacles. Pouring is the act of letting that movement happen from one container to another by tilting, directing the liquid as it flows. So the best fit is pouring, because it names the action of transferring liquid as it flows. Liquefy means turning something into a liquid, drizzle is a light, narrow flow, and flow is the motion itself rather than the act of transferring.

9. Heating affects particles in solids, liquids, and gases by what general effect?

A. All states gain more kinetic energy and movement

B. Only solids increase movement

C. Only gases move faster

D. Particles stop moving

Heating adds energy to the particles, increasing their kinetic energy and how much they move. Temperature reflects average kinetic energy, so adding heat makes particles move faster or vibrate more. In a solid, that shows up as stronger vibrations about fixed points; in a liquid, molecules slide past each other more quickly; in a gas, they move even more rapidly and collide more often. The general effect across all states is that particles gain kinetic energy and move more as heat is added. If enough energy is added, phase changes can occur, like melting or boiling.

10. An instrument used to measure temperature.

A. Barometer

B. Thermometer

C. Hygrometer

D. Calorimeter

Temperature tells us how hot or cold something is, tied to how fast its particles move. To measure it, you use a thermometer. It can be the classic liquid-in-glass type, where the liquid expands as temperature rises, or a digital sensor that converts heat into a reading. The other instruments measure different properties: a barometer gauges atmospheric pressure, a hygrometer measures humidity, and a calorimeter assesses heat energy in a process. So for measuring temperature, a thermometer is the right tool.

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://cambridgescistatesofmatter.examzify.com

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