CAMBRIDGE SCIENCE – STATES OF MATTER PRACTICE TEST (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. Why must temperature be expressed in Kelvin for gas law equations?

A. Celsius is not precise enough.

B. Fahrenheit is the only valid unit.

C. Kelvin is an absolute scale; zero is absolute zero.

D. Temperature units do not matter.

2. 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.

3. When a solid is heated, which property increases to cause more movement?

A. Volume

B. Kinetic Energy

C. Color

D. Mass

4. If atmospheric pressure decreases, what happens to the boiling point?

A. The boiling point will go down

B. The boiling point will go up

C. The boiling point will stay the same

D. The boiling point could change unpredictably

5. What is the change of state from a gas to a liquid called?

A. Condensation

B. Freezing

C. Changes of state

D. Measuring cylinder

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6. Why can boats float more readily in seawater than in freshwater?

A. Seawater is denser than freshwater, providing greater buoyant force.

B. Seawater is less dense than freshwater.

C. Salt makes boats heavier and sinks them.

D. Buoyancy is independent of water composition.

7. What term describes anything that has mass and takes up space?

A. Matter

B. Mass

C. Volume

D. Density

8. Which properties are used to identify states of matter?

A. Shape (definite or not), volume (definite or not), and particle arrangement/motion.

B. Color, texture, and taste.

C. Mass and temperature.

D. Pressure and humidity.

9. Which word means the action of liquids flowing to fill a container?

A. Flow

B. Drip

C. Pour

D. Move

10. Why are boats able to float on seawater compared to freshwater?

A. Seawater is denser than freshwater, providing greater buoyant force that helps objects float.

B. Freshwater is denser than seawater.

C. Salt makes boats heavier and sinks them.

D. Buoyancy is independent of water density.

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Answers

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

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Explanations

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1. Why must temperature be expressed in Kelvin for gas law equations?

A. Celsius is not precise enough.

B. Fahrenheit is the only valid unit.

C. Kelvin is an absolute scale; zero is absolute zero.

D. Temperature units do not matter.

Temperature must be expressed in Kelvin in gas law equations because these laws describe a direct, proportional relationship between temperature and the average kinetic energy of gas molecules. Kelvin is an absolute scale with zero at absolute zero, the point where molecular motion would stop. This means that as temperature rises, kinetic energy (and thus pressure for a fixed amount of gas in a fixed volume) increases in a clean proportional way. Using Celsius or Fahrenheit introduces an offset: zero on those scales does not correspond to zero energy. If you plug Celsius temperatures into the equations, the relationship would include a constant term, breaking the pure proportionality and leading to nonphysical predictions (for example, predicting nonzero pressure even as the thermal energy would be vanishing). Expressing temperature in Kelvin preserves the correct linear relationship and ensures the math matches the underlying physics.

2. 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.

3. When a solid is heated, which property increases to cause more movement?

A. Volume

B. Kinetic Energy

C. Color

D. Mass

When a solid is heated, energy is added to the particles, and temperature reflects the average kinetic energy of those particles. As temperature rises, the particles vibrate more vigorously, so the movement increases because their kinetic energy is higher. Volume changes can occur as the solid expands, and mass stays the same, but neither of those directly causes more motion. Color can change for some materials with temperature, but that doesn't explain the increased motion of the particles.

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4. If atmospheric pressure decreases, what happens to the boiling point?

A. The boiling point will go down

B. The boiling point will go up

C. The boiling point will stay the same

D. The boiling point could change unpredictably

Boiling point is the temperature at which a liquid's vapor pressure equals the pressure surrounding it. Atmospheric pressure is that surrounding pressure, so when the outside pressure drops, the liquid only needs a lower temperature for its vapor pressure to match it. That means the boiling point decreases. This is why water boils at lower temperatures at high altitudes, and in a vacuum it can boil at room temperature. So, a decrease in atmospheric pressure leads to a lower boiling point. The other options don't fit because the boiling point does not rise with lower pressure, it does not stay the same, and it changes in a predictable, not unpredictable, way.

5. What is the change of state from a gas to a liquid called?

A. Condensation

B. Freezing

C. Changes of state

D. Measuring cylinder

Condensation is the change of state from a gas to a liquid. It happens when a substance loses energy, so the particles move more slowly and get close enough to form intermolecular bonds that give the liquid shape and flow. You can see it in everyday life when water vapor in the air cools on a cold surface and forms droplets, like on a chilly bathroom mirror or a misty window. This is different from freezing, which is the reverse where a liquid becomes a solid. And "changes of state" is a broad label for any transition (solid to liquid, liquid to gas, etc.), not the specific gas-to-liquid direction here. A measuring cylinder is just a piece of equipment, not a phase-change process.

6. Why can boats float more readily in seawater than in freshwater?

A. Seawater is denser than freshwater, providing greater buoyant force.

B. Seawater is less dense than freshwater.

C. Salt makes boats heavier and sinks them.

D. Buoyancy is independent of water composition.

Buoyancy comes from the density of the surrounding fluid: the upward buoyant force equals the weight of the fluid the hull displaces. Seawater is denser than freshwater because dissolved salts add mass per unit volume. That means, for the same portion of hull submerged, seawater weighs more and pushes upward harder. With this larger buoyant force, the boat can balance its weight more easily, so it floats with less hull submerged and can carry more load before sinking. In freshwater, the displaced water weighs less, so the buoyant force is smaller and the boat must displace more water to balance its weight. The salt changes the fluid's density, not the boat's weight directly, and buoyancy depends on how dense the water is. So the greater density of seawater increases the buoyant force, making floating easier there than in freshwater.

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7. What term describes anything that has mass and takes up space?

A. Matter

B. Mass

C. Volume

D. Density

Matter is anything that has mass and takes up space. This category includes solids, liquids, gases, and even plasmas, all of which have mass and occupy volume. Mass tells how much matter an object contains, while volume tells how much space it fills; density mixes the two into mass per volume. So the term that describes both properties—having mass and taking up space—is matter. For example, a rock has mass and volume, and so does air, though air is less dense.

8. Which properties are used to identify states of matter?

A. Shape (definite or not), volume (definite or not), and particle arrangement/motion.

B. Color, texture, and taste.

C. Mass and temperature.

D. Pressure and humidity.

States of matter are identified by how matter takes shape and occupies space, and by how its particles are arranged and move. A solid has a definite shape and definite volume because its particles are tightly packed and mainly vibrate in place. A liquid keeps its definite volume but adopts the shape of its container because its particles can slide past one another, giving it fluidity. A gas has neither definite shape nor definite volume; its particles are far apart and move freely, filling the space available and being easily compressible. These three properties—whether shape is definite, whether volume is definite, and how particles are arranged and move—are the best way to tell which state of matter something is in. Color, texture, and taste aren't reliable indicators of state, and while mass, temperature, pressure, or humidity relate to conditions that can affect state, they don't by themselves define the state.

9. Which word means the action of liquids flowing to fill a container?

A. Flow

B. Drip

C. Pour

D. Move

When we talk about getting liquid from one container into another to fill it, the word that fits that specific action is pour. Pour describes tipping or tilting a container so the liquid flows out and into a receiving container, often with the goal of filling it. Flow is a general description of liquids moving, not the act of transferring into another container. Drip implies small, intermittent drops rather than a steady filling action. Move is too broad to capture the idea of transferring liquid to fill a container. So pour is the natural choice, as in pouring water from a pitcher into a glass to fill it.

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10. Why are boats able to float on seawater compared to freshwater?

A. Seawater is denser than freshwater, providing greater buoyant force that helps objects float.

B. Freshwater is denser than seawater.

C. Salt makes boats heavier and sinks them.

D. Buoyancy is independent of water density.

The main idea is that buoyant force depends on the density of the fluid. When an object is in a fluid, the fluid pushes upward with a force equal to the weight of the fluid that would occupy the space the object displaces. Seawater is denser than freshwater because of the dissolved salts, so for the same submerged volume a boat displaces more mass of seawater. That larger buoyant force counteracts the boat's weight more, allowing it to float (often with less of it submerged) in seawater than in freshwater. In freshwater, the buoyant force is smaller due to lower density, so the boat must sink deeper to balance its weight. The other ideas—that freshwater is denser, that salt makes boats heavier and sinks them, or that buoyancy doesn't depend on density—don't fit because buoyancy clearly depends on the density of the surrounding water.

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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://cambridgescistatesofmatter.examzify.com

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

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