PRE-IB GRADE 9 SCIENCE 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 name of the family of metallic elements in group 1 that are highly reactive, have low density and melting points, and are soft?

A. Alkaline earth metals

B. Alkali metals

C. Corrosive

D. Homogeneous

2. Indicator Species are organisms that signal changes in ecosystem health by...

A. A predator that indicates food chain length

B. An organism used to monitor water quality exclusively

C. A plant indicator of soil type only

D. Organism signaling ecosystem health changes by presence, absence, or abundance

3. Which term uses chemical paste instead of a liquid electrolyte and cannot be recharged?

A. Primary/Dry Cell

B. Secondary Cell

C. Loads

D. Semiconductors

4. Valence electrons are defined as

A. The total number of electrons in the atom.

B. The number of electrons on the last shell/orbit of the atom.

C. The energy level of the outermost electron.

D. The number of protons in the nucleus.

5. Which process is part of the carbon cycle?

A. Nuclear fission

B. Evaporation

C. Photosynthesis

D. Sedimentation

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6. Which scientist used the cathode ray tube to discover electrons and proposed the plum pudding model of the atom?

A. Niels Bohr

B. JJ Thomson

C. Ernest Rutherford

D. John Dalton

7. Which property increases with more matter when the substance is unchanged?

A. Mass

B. Colour

C. Density

D. Boiling Point

8. A molecular compound is

A. A mixture of two or more nonmetals.

B. A pure substance consisting of atoms that have covalent bonds, where electrons between atoms are shared. They are called molecules and are made up of all non-metal elements.

C. A pure substance made from ions with ionic bonds.

D. A substance formed by metallic bonding.

9. Which statement about ionic compounds is correct regarding melting points and conductivity when dissolved or molten?

A. Low melting points but conduct electricity as solids.

B. High melting points and they conduct electricity when dissolved or molten.

C. Low melting points and do not conduct electricity.

D. High melting points but do not conduct electricity.

10. How is the cost of electricity calculated?

A. Power used (kW) x time (h) x Cost of Energy (c/kWh)

B. Energy divided by time

C. Voltage x current

D. Resistance x time

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Answers

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

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Explanations

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1. What is the name of the family of metallic elements in group 1 that are highly reactive, have low density and melting points, and are soft?

A. Alkaline earth metals

B. Alkali metals

C. Corrosive

D. Homogeneous

Alkali metals are the family described. They are in group 1 of the periodic table and are highly reactive because they have a single electron in their outer shell that they readily lose to form a +1 ion. Their softness lets them be cut with a knife, and they have low densities and relatively low melting points compared with many other metals. Reactivity increases as you move down the group, and they react vigorously with water to produce hydrogen gas and alkaline hydroxides. Alkaline earth metals are a different family (group 2), generally harder, denser, and with higher melting points than alkali metals. "Corrosive" is a property, not a family, and "homogeneous" describes a uniform mixture, not a metal group.

2. Indicator Species are organisms that signal changes in ecosystem health by...

A. A predator that indicates food chain length

B. An organism used to monitor water quality exclusively

C. A plant indicator of soil type only

D. Organism signaling ecosystem health changes by presence, absence, or abundance

Indicator species reveal changes in ecosystem health by their presence, absence, or changing numbers. They're useful because these organisms respond to shifts in environmental conditions—like pollution, habitat loss, climate, or nutrient levels—and thus provide an early warning about how well an ecosystem is doing. For example, lichens are sensitive to air pollutants, so a decline or disappearance can signal poorer air quality; amphibians and aquatic insects often reflect water quality because they're sensitive to pollutants and habitat changes. The idea is that the status and abundance of these organisms mirror the broader health of the environment. The other options are narrower or misleading: a predator indicating food chain length doesn't directly measure overall health; focusing only on water quality or only on soil type misses the broader signaling role indicator species have across ecosystems.

3. Which term uses chemical paste instead of a liquid electrolyte and cannot be recharged?

A. Primary/Dry Cell

B. Secondary Cell

C. Loads

D. Semiconductors

The concept here is energy storage chemistry and why some batteries can't be reused. A dry cell uses a paste-like electrolyte instead of a liquid one, making it compact and spill-resistant. This design supports a one-time chemical reaction that cannot be easily reversed by charging, so it isn't rechargeable. In contrast, a secondary cell is designed to have its reactions reversed by applying electrical current, so it can be recharged. The other terms aren't about energy storage characteristics: a load is a device that consumes power, and semiconductors are materials used in electronics, not batteries.

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4. Valence electrons are defined as

A. The total number of electrons in the atom.

B. The number of electrons on the last shell/orbit of the atom.

C. The energy level of the outermost electron.

D. The number of protons in the nucleus.

Valence electrons are the electrons in the outermost energy level of an atom—the ones farthest from the nucleus and most involved in bonding. Because they sit in the outer shell, these electrons are the ones that can be gained, shared, or lost when atoms form compounds, which is why their count helps determine how many bonds an atom can form and how it behaves chemically. This is why describing valence electrons as the number of electrons on the last shell best captures their role. The total number of electrons in the atom includes inner shells too, not just the outermost shell. The energy level of the outermost electron describes its energy value rather than how many electrons reside in that shell. The number of protons in the nucleus is the atomic number, not the valence electron count.

5. Which process is part of the carbon cycle?

A. Nuclear fission

B. Evaporation

C. Photosynthesis

D. Sedimentation

Photosynthesis is the process that moves carbon from the atmosphere into living matter. Plants, algae, and some bacteria use sunlight to convert carbon dioxide and water into organic molecules like glucose, effectively locking carbon into biomass and releasing oxygen. This carbon fixation is essential to the cycle because it creates the biomass that respiration, decomposition, and other processes later return as CO2. The other options don't fit: nuclear fission is a nuclear reaction unrelated to carbon cycling; evaporation belongs to the water cycle, not carbon; sedimentation can store carbon long-term, but the everyday carbon exchange most students learn about is photosynthesis.

6. Which scientist used the cathode ray tube to discover electrons and proposed the plum pudding model of the atom?

A. Niels Bohr

B. JJ Thomson

C. Ernest Rutherford

D. John Dalton

The key idea is how experimental evidence with a cathode-ray tube revealed subatomic particles called electrons and shaped early ideas about atomic structure. In these experiments, a beam travels from the negatively charged electrode toward the positive electrode and can be bent by electric and magnetic fields. The way the beam bends shows it carries negative charge, and measurements of its deflection indicate the particles have a very small mass relative to their charge. From this, a scientist proposed that atoms aren't indivisible spheres after all, but contain these negatively charged electrons embedded in a positively charged material, like plums in a pudding. This is the plum pudding model, credited to JJ Thomson. To place it in context, later experiments would push this picture aside in favor of a tiny nucleus, and other models emerged to explain how electrons are arranged around it. But the identification of electrons from cathode-ray experiments and the plum pudding proposal belong to Thomson, making him the correct figure for this question.

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7. Which property increases with more matter when the substance is unchanged?

A. Mass

B. Colour

C. Density

D. Boiling Point

Mass is the property that increases with more matter because it directly measures how much stuff there is. If you have more of the same substance, you've added more matter, so the mass goes up. Other properties don't follow this same rule: color depends on light interaction and usually doesn't change just because you have more material, provided the material is the same; boiling point is set by the substance and the pressure, not by how much you have, so it stays the same; density is a ratio of mass to volume, and for a uniform material at a given temperature and pressure it stays the same even if you add more, unless you change the volume. So the amount of material specifically causes mass to increase.

8. A molecular compound is

A. A mixture of two or more nonmetals.

B. A pure substance consisting of atoms that have covalent bonds, where electrons between atoms are shared. They are called molecules and are made up of all non-metal elements.

C. A pure substance made from ions with ionic bonds.

D. A substance formed by metallic bonding.

Molecular compounds form when nonmetal atoms share electrons through covalent bonds, producing discrete units called molecules. Because the bonding involves sharing rather than electron transfer, the substance is built from molecules and is typically composed of nonmetal elements. This distinguishes it from ionic compounds, which form by transfer of electrons to create ions held together by ionic bonds, and from metallic bonding, where electrons are delocalized in a metal lattice. A mixture of nonmetals would not have a single, uniform set of molecules, so it isn't a molecular compound.

9. Which statement about ionic compounds is correct regarding melting points and conductivity when dissolved or molten?

A. Low melting points but conduct electricity as solids.

B. High melting points and they conduct electricity when dissolved or molten.

C. Low melting points and do not conduct electricity.

D. High melting points but do not conduct electricity.

Ionic compounds have high melting points because they're held together by strong electrostatic forces in a crystal lattice. That lattice energy is large, so a lot of energy is needed to break it apart into a liquid. In the solid state, the ions are locked in place, so they can't move to carry electrical charge, and the solid doesn't conduct electricity. When melted or dissolved, the lattice breaks apart and the ions become free to move. These mobile ions provide charge carriers, allowing electricity to flow. So, they have high melting points and conduct electricity when dissolved or molten. For example, table salt (NaCl) doesn't conduct as a solid, but conducts when melted or dissolved in water.

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10. How is the cost of electricity calculated?

A. Power used (kW) x time (h) x Cost of Energy (c/kWh)

B. Energy divided by time

C. Voltage x current

D. Resistance x time

Cost of electricity depends on two things: how much energy you use and how much energy costs per unit. Energy used by a device is found by multiplying its power by the time it runs. If a device uses P kilowatts for t hours, it consumes E = P × t kilowatt-hours. The bill is then energy times the price per kilowatt-hour, so Cost = P × t × (price per kWh). For example, a 1 kW heater running 3 hours at 10 cents per kWh costs 1 × 3 × 0.10 = 0.30 dollars. Dividing energy by time would give power, not cost; voltage × current gives power, not cost; and resistance × time isn't a standard way to compute cost.

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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://preibgrade9science.examzify.com

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

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