

Ontario Grade 9 Science Class Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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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 is an ecosystem?

- A. A community of living organisms interacting only with other organisms.**
- B. A collection of abiotic factors without living organisms.**
- C. A community of organisms interacting with both biotic and abiotic factors.**
- D. A large expanse of land unaffected by human activity.**

2. What is a black hole?

- A. A region in space where gravity pulls so much that even light cannot get out**
- B. A new galaxy forming**
- C. The end of the universe**
- D. The collapse of a large star**

3. Which best describes a physical property?

- A. A property that changes the chemical composition of a substance**
- B. A property that cannot be determined without altering the substance**
- C. A characteristic that can be observed without changing the substance's composition**
- D. A trait that makes a substance reactive with other chemicals**

4. What is the equation for cellular respiration?

- A. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$**
- B. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$**
- C. $H_2O + CO_2 \rightarrow O_2 + C_6H_{12}O_6$**
- D. $O_2 + C_6H_{12}O_6 \rightarrow CO_2 + H_2O$**

5. What is cellular respiration?

- A. A process of converting oxygen into glucose**
- B. A method of energy production that does not involve oxygen**
- C. The conversion of glucose and oxygen into energy**
- D. A mechanism of photosynthesis in plants**

- 6. What is a compound?**
- A. A mixture of two or more elements**
 - B. An element found in its natural state**
 - C. A pure substance of two or more different elements that are chemically joined**
 - D. A chemical reaction product**
- 7. Which elements are classified as noble gases?**
- A. Elements in Group 18 of the periodic table**
 - B. All gaseous elements that are non-metallic**
 - C. Elements that are metalloids**
 - D. Elements that are mostly found as gases in the atmosphere**
- 8. What is the Big Bang Theory?**
- A. The theory that the universe is infinite**
 - B. A theory that states the universe does not expand**
 - C. The theory that the universe originated 20 billion years ago from an explosion of a small mass of matter**
 - D. A theory about the future collision of galaxies**
- 9. What are organisms not targeted by pesticides known as?**
- A. Native species**
 - B. Invasive species**
 - C. Non-cible organisms**
 - D. Beneficial insects**
- 10. What does the electrostatic series arrange?**
- A. Materials based on their electrical conductivity**
 - B. Materials based on their tendency to gain electrons**
 - C. Elements based on their atomic number**
 - D. Compounds based on their chemical reactivity**

Answers

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

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Explanations

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1. What is an ecosystem?

- A. A community of living organisms interacting only with other organisms.
- B. A collection of abiotic factors without living organisms.
- C. A community of organisms interacting with both biotic and abiotic factors.**
- D. A large expanse of land unaffected by human activity.

An ecosystem is characterized by the interaction of living organisms, known as biotic factors, with their environment, which includes non-living components, known as abiotic factors. This concept reflects how both living things, such as plants and animals, and non-living elements like water, air, soil, and climate, play essential roles in sustaining the system as a whole. The interdependencies within an ecosystem are vital for processes such as nutrient cycling, energy flow, and habitat provision. For instance, plants (biotic) rely on sunlight, water, and soil minerals (abiotic) to grow, while animals (biotic) depend on plants for food and oxygen. The combined interaction between these biotic and abiotic factors creates a balanced environment where living organisms can thrive, reproduce, and interact with each other. Understanding this interconnectedness is crucial in biology and ecology, as it helps explain the functioning and stability of natural systems.

2. What is a black hole?

- A. A region in space where gravity pulls so much that even light cannot get out**
- B. A new galaxy forming
- C. The end of the universe
- D. The collapse of a large star

A black hole is a region in space where gravity is extremely strong due to the concentration of matter in a small space. This causes the region to have such a strong gravitational pull that even light cannot escape, hence the term "black hole". Option B is incorrect because black holes do not form new galaxies, they can only be found within existing galaxies. Option C is incorrect because while the concept of a black hole may lead to speculation about the end of the universe, it is not the definitive end. Option D is incorrect because, while the collapse of a large star may lead to the creation of a black hole, it is not the only means by which a black hole can form.

3. Which best describes a physical property?

- A. A property that changes the chemical composition of a substance
- B. A property that cannot be determined without altering the substance
- C. A characteristic that can be observed without changing the substance's composition**
- D. A trait that makes a substance reactive with other chemicals

A A property that changes the chemical composition of a substance - This option describes a chemical property, which involves changes in the composition of a substance. This is different from a physical property, which does not involve a change in composition. B: A property that cannot be determined without altering the substance - This option is incorrect because physical properties can be observed without altering the substance. This is what distinguishes them from chemical properties. D: A trait that makes a substance reactive with other chemicals - This option describes a chemical property, specifically a substance's reactivity with other chemicals. This is not a physical property, which focuses on observable characteristics of a substance.

4. What is the equation for cellular respiration?

- A. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$**
- B. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
- C. $H_2O + CO_2 \rightarrow O_2 + C_6H_{12}O_6$
- D. $O_2 + C_6H_{12}O_6 \rightarrow CO_2 + H_2O$

The equation for cellular respiration is represented as $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$. This equation shows how glucose ($C_6H_{12}O_6$), which is a simple sugar and an important source of energy for cells, reacts with oxygen (O_2) to produce carbon dioxide (CO_2) and water (H_2O). During cellular respiration, organisms convert the chemical energy stored in glucose into a form that cells can use, primarily in the form of adenosine triphosphate (ATP). The process occurs in several stages, primarily in the mitochondria of cells, and is essential for obtaining energy from food. The correct equation illustrates the fundamental process whereby nutrients (like glucose) and oxygen are transformed into waste products while releasing energy. In contrast, the other options do not represent this energy-releasing process correctly. For example, the equation that reverses the roles of products and reactants implies photosynthesis rather than respiration, where carbon dioxide and water are used to produce glucose and oxygen instead. Recognizing this difference is crucial for understanding cellular respiration and its role in the life of living organisms.

5. What is cellular respiration?

- A. A process of converting oxygen into glucose
- B. A method of energy production that does not involve oxygen
- C. The conversion of glucose and oxygen into energy**
- D. A mechanism of photosynthesis in plants

Cellular respiration is a metabolic process that occurs in living organisms, where glucose and oxygen are converted into energy, carbon dioxide, and water. This process takes place in the mitochondria of cells and is essential for producing adenosine triphosphate (ATP), which is the primary energy carrier in all biological systems. By using glucose, which is a product of digestion or photosynthesis, and oxygen, which is obtained from the environment, the cells are able to efficiently generate the energy needed for various functions such as growth, movement, and cellular repair. The confusion with the other options arises from their definitions. The option that mentions converting oxygen into glucose misrepresents the roles of oxygen and glucose in cellular respiration; glucose is not formed from oxygen—instead, glucose is broken down using oxygen. The choice that defines a method of energy production that does not involve oxygen refers to anaerobic respiration, which is distinct from the aerobic process of cellular respiration that occurs with oxygen. Lastly, the mechanism of photosynthesis pertains to the process by which plants convert sunlight into chemical energy using carbon dioxide and water to produce glucose, which is entirely separate from cellular respiration.

6. What is a compound?

- A. A mixture of two or more elements
- B. An element found in its natural state
- C. A pure substance of two or more different elements that are chemically joined**
- D. A chemical reaction product

A compound is a pure substance that is formed by chemically joining two or more elements together in fixed ratios. Option A is incorrect because a mixture does not have fixed ratios and the components can be easily separated. Option B is incorrect because it states an element, which by definition cannot be a compound as it cannot be broken down into simpler substances. Option D is incorrect because a compound is not a product of a chemical reaction, but rather is formed through chemical bonding between elements.

7. Which elements are classified as noble gases?

- A. Elements in Group 18 of the periodic table**
- B. All gaseous elements that are non-metallic**
- C. Elements that are metalloids**
- D. Elements that are mostly found as gases in the atmosphere**

Noble gases are a group of elements located in Group 18 of the periodic table. These elements have the common property of having a complete valence electron shell, making them highly stable and unreactive. This group includes Helium, Neon, Argon, Krypton, Xenon, and Radon. Option B is incorrect because not all gaseous elements are classified as noble gases. For example, Hydrogen, Nitrogen, Oxygen, and Fluorine are also gaseous elements but do not fall into the noble gas category. Option C is incorrect because metalloids are elements that have properties of both metals and non-metals, and do not necessarily have to be gases. Option D is incorrect because while noble gases are mostly found as gases in the atmosphere, there are also noble gases that are commonly found in liquid form such as Helium. Additionally

8. What is the Big Bang Theory?

- A. The theory that the universe is infinite**
- B. A theory that states the universe does not expand**
- C. The theory that the universe originated 20 billion years ago from an explosion of a small mass of matter**
- D. A theory about the future collision of galaxies**

The Big Bang Theory is a scientific explanation for the origin and evolution of the universe. It states that approximately 13.8 billion years ago, the universe started as a singularity and then rapidly expanded, resulting in the formation of all known matter and energy. This expansion continues today. Option A is incorrect because the Big Bang Theory does not propose an infinite universe, but rather an expanding one. Option B is incorrect because it goes against the widely accepted evidence and observations that support the Big Bang Theory. Option D is incorrect because the Big Bang Theory focuses on the early stages of the universe, not on future events.

9. What are organisms not targeted by pesticides known as?

- A. Native species**
- B. Invasive species**
- C. Non-cible organisms**
- D. Beneficial insects**

Organisms that are not affected by pesticides are known as non-target organisms. This means they are not intended to be killed or controlled by the pesticide, but may still come into contact with it. Option A refers to organisms that are native to a particular area. Option B refers to species that are introduced to an area and have a negative impact on the ecosystem. Option D refers to insects that are beneficial for pest control. While these organisms may also be unintentionally affected by pesticides, they are not specifically targeted by them. Option C is the best answer because it specifically refers to organisms that are not intended to be affected by pesticides.

10. What does the electrostatic series arrange?

- A. Materials based on their electrical conductivity
- B. Materials based on their tendency to gain electrons**
- C. Elements based on their atomic number
- D. Compounds based on their chemical reactivity

The electrostatic series is a list that ranks materials according to their ability to gain or lose electrons, which relates specifically to the phenomenon of static electricity. Items at the top of the series tend to lose electrons easily and become positively charged, while items lower down have a greater tendency to gain electrons and become negatively charged. Understanding this hierarchy helps in predicting how different materials will interact with each other when they come into contact and are then separated. For example, if one material is higher in the series than another, it is more likely to donate electrons, which leads to an understanding of which material will be positively charged and which will be negatively charged after contact. The other options focus on different properties that do not directly relate to electrostatic behavior. Conductivity pertains to how well materials permit electrical flow, atomic numbers relate to the structure of elements rather than their charge properties, and chemical reactivity speaks to the ability of substances to undergo chemical changes, which does not specifically include electron transfer in the context of static electricity. Therefore, the arrangement based on the tendency to gain or lose electrons accurately captures the essence of the electrostatic series.

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://grade-9-science-ontario.examzify.com>

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

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