ALBERTA GRADE 9 SCIENCE PAT 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.

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 color has a higher frequency among red, blue, green, yellow?

A. Red

B. Green

C. Yellow

D. Blue

2. How do you calculate kilowatt-hours from watts and hours?

A. kWh = Watts x Hours

B. kWh = (Watts x Hours)/1000

C. kWh = (Watts/1000) x Hours

D. kWh = Watts x (Hours/1000)

3. An advantage of reflecting telescopes?

A. Can be made big and clearer images

B. Are easier to maintain

C. Have no light loss

D. Are cheaper to build than refractors

4. The double helix model of DNA was created by which scientists?

A. Rosalind Franklin

B. James Watson and Francis Crick

C. Charles Darwin

D. Gregor Mendel

5. Which sequence lists the basic taxonomic ranks from broadest to most specific as presented in the material?

A. Kingdom, Phylum, Class, Order, Family, Genus, Species

B. Kingdom, Phylum, Class, Order, Family, Species, Genus

C. Kingdom, Class, Phylum, Order, Family, Genus, Species

D. Domain, Kingdom, Phylum, Class, Order, Family, Genus

6. Which statement describes an advantage of reflecting telescopes?

A. They can be made big and clearer images

B. They have no need for alignment

C. They are the lightest and simplest to manufacture

D. They suffer from chromatic aberration

7. Increased temperature causes the reaction rate to

A. Decrease

B. No change

C. Increase

D. Stop

8. What does the term zenith refer to in astronomy?

A. 0 Degrees in altitude

B. 45 Degrees in altitude

C. 60 Degrees in altitude

D. 90 Degrees in altitude

9. What is the overall photosynthesis equation and the inputs and outputs?

A. 6 CO_2 + 6 H_2O + light energy -> $C_6H_{12}O_6$ + 6 O_2; inputs CO_2, H_2O, light; outputs glucose and O_2

B. 6 CO_2 + 6 H_2O -> $C_6H_{12}O_6$ + O_2; no light

C. $C_6H_{12}O_6$ + 6 O_2 -> 6 CO_2 + 6 H_2O; energy released

D. 6 O_2 + 6 H_2O -> CH_4 + CO_2; sunlight not required

10. Who constructed the first electromagnet?

A. Faraday

B. Davy

C. Oersted

D. Ampere

Answers

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

Explanations

1. Which color has a higher frequency among red, blue, green, yellow?

A. Red

B. Green

C. Yellow

D. Blue

Light frequency is higher when the wavelength is shorter. In the visible range, red has the longest wavelength (about 700 nm), which means the lowest frequency among these colors. Blue light has a shorter wavelength (around 450 nm), so its frequency is higher than red, green, and yellow. Green and yellow have even longer wavelengths than blue, so their frequencies are lower. Because shorter wavelengths correspond to higher frequencies, blue is the color with the highest frequency among red, green, yellow, and blue.

2. How do you calculate kilowatt-hours from watts and hours?

A. kWh = Watts x Hours

B. kWh = (Watts x Hours)/1000

C. kWh = (Watts/1000) x Hours

D. kWh = Watts x (Hours/1000)

Energy over time is found by multiplying power by how long it runs. Power in watts times time in hours gives energy in watt-hours. To express that energy in kilowatt-hours, you divide by 1000 because 1 kilowatt equals 1000 watts. So the clear way to write the conversion is kWh = (Watts × Hours) ÷ 1000. This shows exactly how to scale watt-hours into kilowatt-hours. For example, a 100 W device running for 2 hours uses 100 × 2 = 200 Wh, which is 0.2 kWh since 200 ÷ 1000 = 0.2.

3. An advantage of reflecting telescopes?

A. Can be made big and clearer images

B. Are easier to maintain

C. Have no light loss

D. Are cheaper to build than refractors

Reflecting telescopes use mirrors to collect and focus light, and mirrors can be built very large while staying relatively lightweight. This means you can create a telescope with a large aperture, which gathers more light and tightens the diffraction limit, giving brighter and sharper (clearer) images. Because mirrors reflect all colors the same way, there's no chromatic aberration to blur colored edges around objects, which helps maintain image clarity as you build bigger instruments. That combination—large aperture possible with mirrors, plus minimal color distortion—is why an advantage of reflecting telescopes is that they can be made big and yield clearer images. Light loss and maintenance considerations exist (mirror coatings wear, alignment can be needed, and not every design is cheaper in every case), so those factors don't trump the main benefit of scalable, high-quality image performance.

4. The double helix model of DNA was created by which scientists?

A. Rosalind Franklin

B. James Watson and Francis Crick

C. Charles Darwin

D. Gregor Mendel

Understanding who proposed the DNA double helix is about recognizing the scientists who put together the model of DNA's structure. James Watson and Francis Crick proposed the double helix in 1953, building a picture of two long strands wound around each other with a sugar-phosphate backbone on the exterior and bases pairing inside. This arrangement, with A pairing with T and G pairing with C, explains how genetic information can be accurately copied because each strand can serve as a template for making the other. Their model drew on Chargaff's base-pairing rules and X-ray diffraction data collected by Rosalind Franklin (and Maurice Wilkins), which pointed to a helical shape. Darwin and Mendel made foundational contributions to biology, but not to the specific structure of DNA.

5. Which sequence lists the basic taxonomic ranks from broadest to most specific as presented in the material?

A. Kingdom, Phylum, Class, Order, Family, Genus, Species

B. Kingdom, Phylum, Class, Order, Family, Species, Genus

C. Kingdom, Class, Phylum, Order, Family, Genus, Species

D. Domain, Kingdom, Phylum, Class, Order, Family, Genus

The sequence being tested reflects the order of taxonomic ranks from broadest to most specific as presented: Kingdom, Phylum, Class, Order, Family, Genus, Species. This aligns with the standard hierarchy where each step narrows classification, with Species being the most specific category. In this material, Domain is not included in the basic ranks, so starting with Kingdom is considered the broadest level shown. That makes the sequence that starts with Kingdom and proceeds in the correct order the best choice. The other options fail because they either swap the relative positions of ranks (placing Class before Phylum, or placing Genus after Species) or they add Domain, which isn't part of the presented list.

6. Which statement describes an advantage of reflecting telescopes?

A. They can be made big and clearer images

B. They have no need for alignment

C. They are the lightest and simplest to manufacture

D. They suffer from chromatic aberration

Reflecting telescopes use a curved mirror to collect and focus light, instead of using lenses. This design allows for large apertures without the instrument becoming extremely heavy or expensive, because a mirror can be supported from behind and polished to shape more easily than a thick, wide glass lens. As a result, mirrors enable bigger, lighter, and relatively simpler-to-manufacture telescopes compared with refracting ones. That practical advantage—being able to build large, more affordable optics due to the mirror-based design—is the best description of why reflectors are advantageous. Additionally, mirrors don't suffer from chromatic aberration, since reflection doesn't separate light by wavelength, so statements claiming they do have this problem aren't accurate.

7. Increased temperature causes the reaction rate to

A. Decrease

B. No change

C. Increase

D. Stop

Raising temperature increases the reaction rate because particles move faster and collide more often and with more energy. When temperature goes up, a larger fraction of collisions have enough energy to overcome the activation energy barrier, so a greater portion of collisions lead to product. The result is a higher rate constant and a faster overall reaction. This means the reaction won't slow down, stay the same, or stop simply due to temperature increase (though extreme temperatures can cause other issues).

8. What does the term zenith refer to in astronomy?

A. 0 Degrees in altitude

B. 45 Degrees in altitude

C. 60 Degrees in altitude

D. 90 Degrees in altitude

The zenith is the point in the sky that's directly overhead of you. In astronomy, altitude measures how high an object is above the horizon, with 0 degrees right on the horizon and 90 degrees directly overhead. So the zenith corresponds to 90 degrees in altitude. The other options describe objects lower in the sky: 45 degrees is halfway up, 60 degrees is high but not overhead, and 0 degrees is on the horizon.

9. What is the overall photosynthesis equation and the inputs and outputs?

A. 6 CO_2 + 6 H_2O + light energy -> $C_6H_{12}O_6$ + 6 O_2; inputs CO_2, H_2O, light; outputs glucose and O_2

B. 6 CO_2 + 6 H_2O -> $C_6H_{12}O_6$ + O_2; no light

C. $C_6H_{12}O_6$ + 6 O_2 -> 6 CO_2 + 6 H_2O; energy released

D. 6 O_2 + 6 H_2O -> CH_4 + CO_2; sunlight not required

Photosynthesis uses light energy to convert carbon dioxide and water into a stored chemical form (glucose) plus oxygen. The overall equation shows the reactants on the left and the products on the right, with light energy required as part of the process. The statement that includes 6 CO_2 + 6 H_2O + light energy -> $C_6H_{12}O_6$ + 6 O_2 is the best because it shows the correct reactants (carbon dioxide, water, and light) and the correct products (glucose and oxygen), and the equation is balanced. The other options don't fit. Without light, photosynthesis can't occur, so a version missing light energy isn't the proper overall equation. The reverse process, glucose plus oxygen yielding carbon dioxide and water with energy released, is respiration, not photosynthesis. The final option describes a different, non-photosynthetic reaction (producing methane from water and oxygen), which isn't how plants convert light energy into chemical energy.

10. Who constructed the first electromagnet?

A. Faraday

B. Davy

C. Oersted

D. Ampere

An electromagnet is made by passing electric current through a coil wrapped around a piece of iron, which magnetizes the iron and creates a controllable magnetic field. The first practical electromagnet was built by William Sturgeon in the 1820s when he wrapped a coil of wire around an iron bar and connected it to a battery. This showed that magnetic strength could be turned on and off with electricity and could be improved by more turns or higher current. Faraday is famous for uncovering electromagnetic induction—how changing magnetic fields can produce current—not for building the first electromagnet. Oersted demonstrated that current creates a magnetic field, and Ampere and Davy contributed important foundational work in electromagnetism, but the credit for the earliest working electromagnet goes to William Sturgeon.

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://albertagr9sciencepat.examzify.com

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