

EARTH SCIENCE AND GEOLOGY PRACTICE EXAM (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

**VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE**

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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 does the moment magnitude (M_w) measure in an earthquake?**
 - A. Peak ground acceleration
 - B. Total energy release
 - C. The duration of shaking
 - D. The area of fault rupture

- 2. Which example represents an igneous rock formed by rapid cooling at the surface?**
 - A. Obsidian
 - B. Limestone
 - C. Slate
 - D. Granite

- 3. The removal and transport of sediment by flowing water is called?**
 - A. Erosion by Streams
 - B. Lithification
 - C. Lahars
 - D. Subduction

- 4. Which seismic wave cannot travel through liquids?**
 - A. P wave
 - B. Surface wave
 - C. Love wave
 - D. S wave

- 5. What causes tides, and which celestial bodies influence them most strongly?**
 - A. Solar flares; the Sun has the strongest effect.
 - B. Gravitational forces of the Moon and Sun; the Moon has the strongest effect.
 - C. Earth's rotation; the Moon has no effect.
 - D. Ocean currents; gravity does not influence tides.

6. Nonrenewable Resource is defined as?

- A. A resource produced by living organisms.
- B. A resource that can be replenished quickly.
- C. A resource that forms so slowly it cannot be replaced on a human timescale.
- D. A resource that is fully renewable over a short time.

7. Hardness measures which property of a mineral?

- A. A mineral's resistance to scratching.
- B. The color of a mineral in powdered form.
- C. The way a mineral reflects light.
- D. The tendency of a mineral to break along flat planes.

8. Which rock is formed from rapid cooling of lava at the surface?

- A. Basalt
- B. Granite
- C. Limestone
- D. Marble

9. Which term best describes a naturally occurring, inorganic solid with a definite chemical composition and crystalline structure?

- A. A mineral's resistance to scratching.
- B. The color of a mineral in powdered form.
- C. A naturally occurring, inorganic solid with a definite chemical composition and crystalline structure.
- D. The way a mineral reflects light.

10. What is the name of the theory describing the movement of the Earth's lithospheric plates?

- A. Evolution
- B. Plate Tectonics
- C. Nebular Hypothesis
- D. Heliocentric Theory

Answers

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

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Explanations

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1. What does the moment magnitude (M_w) measure in an earthquake?

- A. Peak ground acceleration
- B. Total energy release**
- C. The duration of shaking
- D. The area of fault rupture

Moment magnitude measures the total energy released by an earthquake, expressed through seismic moment. Seismic moment combines how stiff the rocks are, how large the fault area that slipped is, and how much slip occurred. In formula terms, the seismic moment is proportional to the area of fault rupture times the average slip (and the rock's rigidity), and M_w is a logarithmic scale derived from that moment to give a uniform sense of an earthquake's size across events. This focuses on the overall energy radiated by the quake, not the intensity at a single site or the duration of shaking. Peak ground acceleration reflects instantaneous shaking at a location, and the duration depends on rupture propagation and path effects, not the total size. The area of fault rupture is part of what contributes to the moment, but M_w is about energy release, making it the best answer.

2. Which example represents an igneous rock formed by rapid cooling at the surface?

- A. Obsidian**
- B. Limestone
- C. Slate
- D. Granite

Rapid cooling of molten rock at the surface creates a glassy texture, because crystals don't have time to form. Obsidian is the natural volcanic glass that forms when lava erupts and cools rapidly at the surface or just beneath it. That quick cooling gives obsidian its smooth, glassy appearance and conchoidal fracture. The other options don't fit this scenario: limestone forms from compacted shells and minerals in sediment; slate forms from metamorphism of shale under directed pressure; granite forms underground and cools slowly to develop visible mineral grains. So obsidian is the example of igneous rock formed by rapid surface cooling.

3. The removal and transport of sediment by flowing water is called?

- A. Erosion by Streams**
- B. Lithification
- C. Lahars
- D. Subduction

Erosion by streams is the process where flowing water removes and transports sediment. As water moves, it has enough energy to pick up particles from the bed and banks, carrying them downstream either in suspension, along the bottom, or by bouncing and rolling (saltation). This continuous removal and relocation of material shapes river valleys and other landscapes. Lithification is the transformation of loose sediment into rock, not its transport. Lahars are volcanic mudflows, a specific hazardous flow with water and volcanic debris. Subduction is a tectonic plate process, not sediment transport by water. So the term that best fits "the removal and transport of sediment by flowing water" is erosion by streams.

4. Which seismic wave cannot travel through liquids?

- A. P wave
- B. Surface wave
- C. Love wave
- D. S wave**

S waves rely on shear motion, which requires a material that can resist shear stress. Liquids have virtually zero shear stiffness, so they cannot support transverse (shear) waves. P waves, by contrast, are compressional and move through any medium that can transmit pressure changes (solids, liquids, and gases). Surface waves also depend on solid boundaries and rigidity, but the fundamental reason this wave won't pass through a liquid is the lack of shear strength. So the wave that cannot travel through liquids is the one that moves by shear.

5. What causes tides, and which celestial bodies influence them most strongly?

- A. Solar flares; the Sun has the strongest effect.
- B. Gravitational forces of the Moon and Sun; the Moon has the strongest effect.**
- C. Earth's rotation; the Moon has no effect.
- D. Ocean currents; gravity does not influence tides.

Tides arise from gravitational forces that external bodies exert on Earth's oceans, and the effect comes from the way gravity changes across the planet. The Moon and the Sun both tug on the oceans, creating bulges on the side of Earth facing them and on the opposite side as the pull weakens with distance. As Earth rotates, these bulges move, producing the regular rise and fall of sea level. The Moon has the stronger influence because it is much closer to Earth, so the gravitational gradient it creates is larger. The Sun, while far more massive, is so far away that its tidal effect is smaller, though still noticeable. When the Sun and Moon align, their tides reinforce each other, making higher high tides and lower low tides. When they're at right angles, the tidal effects partially cancel, producing smaller tides. So the cause is the gravitational forces of the Moon and Sun, with the Moon contributing the largest portion of the tidal effect.

6. Nonrenewable Resource is defined as?

- A. A resource produced by living organisms.
- B. A resource that can be replenished quickly.
- C. A resource that forms so slowly it cannot be replaced on a human timescale.**
- D. A resource that is fully renewable over a short time.

Nonrenewable resources form so slowly that they cannot be replaced on a human timescale. Their creation takes millions of years, while we consume them much faster, so once they're used up, new supplies aren't available within any practical timeframe. Fossil fuels like coal, oil, and natural gas, along with many metal ores, are classic examples. This is why renewable resources—like sunlight, wind, and biomass—that replenish relatively quickly are treated differently. The other ideas describe resources that are produced by living things or that renew rapidly, which doesn't fit the idea of a resource that can't be replaced within a human lifetime.

7. Hardness measures which property of a mineral?

- A. A mineral's resistance to scratching.**
- B. The color of a mineral in powdered form.
- C. The way a mineral reflects light.
- D. The tendency of a mineral to break along flat planes.

Hardness is about a mineral's resistance to scratching. It describes how easily the surface can be marred when in contact with another material. On the Mohs scale, hardness is determined by which minerals can scratch which others: a harder mineral can scratch a softer one, while a softer mineral cannot scratch a harder one. This property reflects the strength of the bonds in the crystal lattice and how tightly the atoms are held together, which governs surface disruption at the atomic level. In practice, you test hardness by scratching the mineral with a material of known hardness or by seeing whether the mineral can scratch a reference material. This trait is distinct from color, streak (the color of the mineral's powder), luster (how light reflects off the surface), or cleavage (the way a mineral breaks along flat planes). Hardness specifically tells you about scratching resistance, not appearance or fracture.

8. Which rock is formed from rapid cooling of lava at the surface?

- A. Basalt**
- B. Granite
- C. Limestone
- D. Marble

Rapid cooling of lava at the surface creates an extrusive igneous rock with a very fine-grained texture. Basalt fits this scenario because it forms when low-viscosity basaltic lava erupts and crystallizes quickly on the surface, producing tiny crystals and a dark, mafic composition. Granite, by contrast, forms from magma cooling slowly underground, giving large crystals. Limestone is a sedimentary rock built from marine organisms or chemical precipitation, not from lava cooling. Marble comes from metamorphosed limestone, altered by heat and pressure, not from lava cooling at the surface. So the rock formed from rapid surface cooling is basalt.

9. Which term best describes a naturally occurring, inorganic solid with a definite chemical composition and crystalline structure?

- A. A mineral's resistance to scratching.
- B. The color of a mineral in powdered form.
- C. A naturally occurring, inorganic solid with a definite chemical composition and crystalline structure.**
- D. The way a mineral reflects light.

A mineral is a naturally occurring, inorganic solid with a definite chemical composition and a crystalline structure. This means minerals form through natural geological processes, are not living, have a specific formula (or a limited range of compositions), and possess an orderly arrangement of atoms in a crystal lattice. These features—natural origin, lack of organic content, fixed chemistry, and a repeating internal pattern—set minerals apart. Descriptions like hardness, streak, and luster describe how a mineral looks or behaves, but they don't define what a mineral is.

10. What is the name of the theory describing the movement of the Earth's lithospheric plates?

A. Evolution

B. Plate Tectonics

C. Nebular Hypothesis

D. Heliocentric Theory

Plate tectonics explains how the Earth's outer shell moves. The lithosphere is broken into rigid plates that ride atop the partially molten mantle, with convection currents in the mantle driving their motion. At plate boundaries, these motions create seafloor spreading, subduction, and mountain-building processes, and a wide range of evidence—like the fit of continental coastlines, earthquake and volcano patterns, and magnetic stripes in ocean crust—all supports this view. Other options describe biological change, how the solar system formed, or the Sun's position in the solar system, none of which address the movement of Earth's plates.

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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://earthscigeology.examzify.com>

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

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