

TEXAS A&M UNIVERSITY (TAMU) GEOL 104 PHYSICAL GEOLOGY EXAM 1 PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 causes mineral precipitation from solution?**
 - A. Saturation of ions in solution or evaporation
 - B. Increase in pressure
 - C. Addition of water
 - D. Decrease in temperature only
- 2. Which bond type involves a 'sea' of delocalized electrons?**
 - A. Ionic Bonding
 - B. Covalent Bonding
 - C. Metallic Bonding
 - D. Hybrid Bonding
- 3. Divergent plate boundaries are associated with...**
 - A. Subduction zones
 - B. Ocean ridges
 - C. Large mountain belts
 - D. Deep ocean trenches
- 4. What is magnetic reversal?**
 - A. The polarity flips periodically
 - B. The polarity flips never occur
 - C. The Earth's rotation changes direction
 - D. The magnetic field remains constant
- 5. What causes magnetized minerals in rocks to align?**
 - A. Direction of magnetic force lines at the time of their formation
 - B. Tectonic stress
 - C. External solar radiation
 - D. Present-day current direction
- 6. The biosphere includes which of the following?**
 - A. The atmosphere
 - B. The geosphere
 - C. All plant and animal life
 - D. The hydrosphere

- 7. Which geographic feature is formed by oceanic-continental convergence, such as the Andes?**
- A. Continental volcanic arc
 - B. Island arc
 - C. Oceanic trench
 - D. Rift valley
- 8. Color is often unreliable for identifying minerals because it is highly variable due to impurities. Which property is being described?**
- A. Luster
 - B. Streak
 - C. Color
 - D. Density
- 9. Lower Mantle is described as**
- A. A zone of strong, very hot rocks subjected to gradual flow below the transition zone.
 - B. The outer crust.
 - C. A liquid iron-nickel alloy.
 - D. A cold, rigid layer.
- 10. Which mineral group accounts for the vast majority of Earth's crust?**
- A. Carbonate minerals
 - B. Halide minerals
 - C. Silicate minerals
 - D. Sulfate minerals

Answers

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

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Explanations

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1. What causes mineral precipitation from solution?

A. Saturation of ions in solution or evaporation

B. Increase in pressure

C. Addition of water

D. Decrease in temperature only

Minerals precipitate from solution when the dissolved ions reach saturation and then become supersaturated, often because evaporation concentrates the ions. As water leaves or conditions shift to favor solid formation, the excess dissolved material can no longer be held in solution and a solid mineral forms. This is the direct way precipitation happens. Adding more water would dilute and reduce precipitation, while a simple decrease in temperature or a change in pressure can influence solubility for some systems, but the primary driver here is reaching saturation and, if evaporating water or other concentrating processes occur, driving the solution into supersaturation.

2. Which bond type involves a 'sea' of delocalized electrons?

A. Ionic Bonding

B. Covalent Bonding

C. Metallic Bonding

D. Hybrid Bonding

Metallic bonding features a sea of delocalized electrons. In a metal, the outer-shell electrons aren't tied to any one atom; they move freely among the positively charged metal ions in the lattice. This electron sea holds the structure together through electrostatic attraction and allows electrons to flow, giving metals their electrical conductivity and malleability. Ionic bonding relies on transfer of electrons and localized ions, while covalent bonding involves sharing electrons between specific atoms. The "sea of electrons" concept is unique to metallic bonding, making it the best answer.

3. Divergent plate boundaries are associated with...

A. Subduction zones

B. Ocean ridges

C. Large mountain belts

D. Deep ocean trenches

When two tectonic plates move apart, magma from the mantle can rise to fill the gap and solidify, creating new crust. This process, called seafloor spreading, builds up long, elevated features at the surface—the ocean ridges—where the crust is being formed. So divergent boundaries are characterized by ocean ridges, such as the Mid-Atlantic Ridge or the East Pacific Rise, where new ocean floor is continuously created as plates separate. Subduction zones produce deep ocean trenches and volcanic arcs, and continental collisions create large mountain belts, not ocean ridges.

4. What is magnetic reversal?

- A. The polarity flips periodically
- B. The polarity flips never occur
- C. The Earth's rotation changes direction
- D. The magnetic field remains constant

Magnetic reversal means that Earth's magnetic field changes its polarity, so the direction of the magnetic poles flips. Over geological time, the field has flipped many times, which would make a compass point toward the opposite geographic pole during a reversal. Evidence comes from paleomagnetism in rocks: as lava cools and as seabed rocks form, minerals lock in a record of the field's direction, creating alternating normal and reversed polarity bands on the ocean floor. This shows the field does not stay constant and that reversals happen at intervals—hence the statement that the polarity flips periodically. It isn't about a change in Earth's rotation, and it isn't never occurring.

5. What causes magnetized minerals in rocks to align?

- A. Direction of magnetic force lines at the time of their formation
- B. Tectonic stress
- C. External solar radiation
- D. Present-day current direction

Magnetized minerals align with the external magnetic field that surrounds them at the time they form. In rocks, ferromagnetic minerals like magnetite orient their magnetic moments to match Earth's magnetic field as the rock cools or crystallizes and pass through the Curie temperature. Once the temperature drops below that point, the magnetic ordering becomes locked in, preserving a record of the field direction at that moment. That's why the magnetization tells us the Earth's field direction at formation. Tectonic stress, solar radiation, or the present-day current direction don't set this alignment (they'd only matter if the rock were heated and re-magnetized later).

6. The biosphere includes which of the following?

- A. The atmosphere
- B. The geosphere
- C. All plant and animal life
- D. The hydrosphere

The biosphere is the global zone of life on Earth—the places where living organisms exist and interact with their surroundings. Among the options, the best match is all plant and animal life because the biosphere is defined by living beings on Earth. The atmosphere, geosphere, and hydrosphere describe the air, rocks/minerals, and water that make up the planet, respectively; they are essential environments that support life, but they are not themselves the living component. The biosphere encompasses life across air, land, and water, including plants, animals, and microorganisms, which is why this choice most accurately reflects what the biosphere is.

7. Which geographic feature is formed by oceanic-continental convergence, such as the Andes?

A. Continental volcanic arc

B. Island arc

C. Oceanic trench

D. Rift valley

When an oceanic plate sinks beneath a continental plate, melting and magma production rise at the margin, producing volcanoes that build up along the continent. This creates a chain of volcanoes parallel to the subduction zone called a continental volcanic arc. The Andes are a classic example of this, forming along the western edge of South America where the Nazca Plate subducts under the South American Plate. An island arc results from oceanic-oceanic subduction, producing volcanic islands rather than continental volcanoes. An oceanic trench is the deep boundary scar at the subduction zone, not the volcanic mountains along the continent. A rift valley forms at divergent boundaries where the crust is pulling apart, not at a subduction margin.

8. Color is often unreliable for identifying minerals because it is highly variable due to impurities. Which property is being described?

A. Luster

B. Streak

C. Color

D. Density

Color is the property being described. Impurities can introduce a wide range of hues in the same mineral, so color varies a lot and isn't a reliable way to identify minerals. That variability is exactly what the statement calls out. In practice, other properties like streak (the color of the mineral's powder) tend to be more consistent and useful for identification, while luster and density describe different aspects of a mineral's appearance and composition.

9. Lower Mantle is described as

A. A zone of strong, very hot rocks subjected to gradual flow below the transition zone.

B. The outer crust.

C. A liquid iron-nickel alloy.

D. A cold, rigid layer.

The lower mantle is a hot, solid region that behaves like a very viscous rock, slowly flowing over long timescales. It sits beneath the transition zone and extends down to the outer core boundary. Because of the immense pressures, rocks there stay solid but deform and creep so they can move gradually, driving slow mantle convection. This description—hot, strong rocks undergoing gradual flow below the transition zone—fits the lower mantle best. It isn't the outer crust, nor a liquid iron-nickel alloy, nor a cold, rigid layer.

10. Which mineral group accounts for the vast majority of Earth's crust?

- A. Carbonate minerals
- B. Halide minerals
- C. Silicate minerals**
- D. Sulfate minerals

The main idea is that silicate minerals dominate Earth's crust because silicon and oxygen form an enormous family of minerals that build most crustal rocks. Silicates, including feldspars, quartz, pyroxenes, amphiboles, and micas, are the most common rock-forming minerals in both continental and oceanic crust. Oxygen is the most abundant element in the crust, followed by silicon, and their silicon-oxygen tetrahedra link in a variety of ways—from single chains to complex frameworks—creating a vast and stable set of minerals that make up the bulk of crustal material. Other mineral groups—carbonates, sulfates, or halides—are important in specific environments (like limestone in sedimentary settings or evaporite deposits) but do not occur in the same overall abundance as silicates. That combination of chemical abundance and structural variety is why silicate minerals account for the vast majority of Earth's crust.

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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://tamu-geol104exam1.examzify.com>

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

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