ASSOCIATION OF STATE BOARDS OF GEOLOGY ASBOG 1 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. Which of the following is a valid use of ground-penetrating radar?

A. Determining location of buried objects

B. Measuring soil moisture

C. Assessing mineral composition

D. Estimating density

2. Which mineral among listed is tin-bearing sulfide?

A. Stannite

B. Cassiterite

C. Teallite

D. Franckeite

3. Which geologic law explains the relative ages of rocks with respect to one another in a map or cross section in which all the geologic units are roughly parallel and are not overturned?

A. Law of Superposition

B. Principle of Original Horizontality

C. Principle of Faunal Succession

D. Principle of Uniformitarianism

4. In seismic refraction profiles, what signal is most important?

A. the first arrival at each geophone

B. the second arrival

C. peak amplitude at surface

D. frequency content of the source

5. What is a paternoster lake?

A. One of a series of glacial lakes connected by a single stream or braided stream system

B. A single deep lake created by glacier damming

C. A lake formed in a caldera

D. A tectonically formed lake

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6. Soft sediments are best sampled with a ___ to obtain undisturbed samples.

A. Piston corer

B. Densified piston sampler

C. Core barrel

D. Shelby tube

7. What is the term for the pile of rocks that accumulates at the base of a cliff, chute, or slope?

A. Scree

B. Talus

C. Drift

D. Till

8. The mineral with the chemical formula K(AlSi3O8) corresponds to which potassium feldspar species?

A. Quartz

B. Orthoclase

C. Microcline

D. Sanidine

9. In a regressive sediment sequence followed by delta development, which order from oldest to youngest is correct?

A. Shale, limestone and sandstone overlain by clay and marsh deposits

B. Limestone, shale and sandstone overlain by sand, clay and marsh deposits

C. Sandstone, limestone and shale overlain by marsh deposits

D. Marsh deposits overlain by sandstone, shale, and limestone

10. What is the correct oldest-to-youngest sequence for a transgressive deposit sequence?

A. Sandstone, Limestone, Shale

B. Limestone, Shale, Sandstone

C. Shale, Limestone, Sandstone

D. Shale, Sandstone, Limestone

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Answers

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

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Explanations

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1. Which of the following is a valid use of ground-penetrating radar?

A. Determining location of buried objects

B. Measuring soil moisture

C. Assessing mineral composition

D. Estimating density

Ground-penetrating radar works by sending short pulses of high-frequency radio waves into the ground and listening for echoes from interfaces where the subsurface electrical properties change. Buried objects like pipes, tanks, or voids create strong contrasts and produce characteristic reflections, making it possible to pinpoint their horizontal location and estimate depth from the travel time. This direct sensitivity to buried features is why locating buried objects is the best, clearest use of GPR. Moisture can influence GPR signals, but GPR is not a reliable direct tool for measuring soil moisture. It's much less precise for quantifying moisture content than methods specifically designed for that purpose. Mineral composition isn't revealed by GPR either, since it mainly responds to dielectric contrasts rather than mineralogy. Density isn't a direct output either; while wave speed in GPR studies can be affected by density, deriving density requires additional calibration and data.

2. Which mineral among listed is tin-bearing sulfide?

A. Stannite

B. Cassiterite

C. Teallite

D. Franckeite

Tin-bearing sulfide minerals are those where tin is a primary part of a sulfide structure. Stannite fits this perfectly with the formula Cu2FeSnS4, in which tin sits inside the sulfide lattice alongside copper and iron. This makes it a clear tin-bearing sulfide. Cassiterite is tin oxide (SnO2), not a sulfide, so it doesn't match. Teallite and franckeite are more complex sulfosalts; they contain tin but aren't simple sulfide minerals, so the most straightforward example of a tin-bearing sulfide among the options is stannite.

3. Which geologic law explains the relative ages of rocks with respect to one another in a map or cross section in which all the geologic units are roughly parallel and are not overturned?

A. Law of Superposition

B. Principle of Original Horizontality

C. Principle of Faunal Succession

D. Principle of Uniformitarianism

In undisturbed, stacked sedimentary rocks that are roughly parallel and not overturned, the order of layers directly records the passage of time. The bottom layer formed first and is the oldest; each successive layer records deposition after the previous one, so the top layer is the youngest. This straightforward vertical-to-temporal relationship is what the Law of Superposition captures, making it the best way to determine relative ages on a map or cross section where the beds stay in place. Original Horizontality explains that sediments are deposited near horizontally, which helps interpret why layers appear flat, but it doesn't itself establish the age order of the beds. Faunal Succession uses fossils to correlate layers across regions, which is helpful but requires fossil content and isn't the direct rule for ordering non-fossil beds. Uniformitarianism is a broad principle about processes shaping Earth's history, not the specific method for ranking the ages of stacked layers.

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4. In seismic refraction profiles, what signal is most important?

A. the first arrival at each geophone

B. the second arrival

C. peak amplitude at surface

D. frequency content of the source

In seismic refraction profiles, the most important signal is the first arrival energy at each geophone. This earliest energy comes from waves that travel through the upper, slower layer and then refract into the faster underlying layer, arriving at the surface sooner than any later the energy. Those first-arrival times plotted against distance produce a clear, analyzable pattern: a straight-line trend whose slope is related to the velocity of the top layer, and a break point that helps identify when the refracted path becomes dominant. From this travel-time pattern you can determine the velocities of the layers and the depth to the interface. Amplitude at the surface and the detailed frequency content of the source don't provide the same robust, direct constraints on layer velocities and depths. Amplitude is influenced by coupling, attenuation, source strength, and impedance contrasts, while frequency content affects resolution rather than giving a straightforward velocity–depth model. The second arrival, though it can carry additional information in more complex, multi-layer scenarios, is not the primary signal used to construct the standard refraction velocity model.

5. What is a paternoster lake?

A. One of a series of glacial lakes connected by a single stream or braided stream system

B. A single deep lake created by glacier damming

C. A lake formed in a caldera

D. A tectonically formed lake

A paternoster lake is a chain of small glacial lakes that sit in a valley floor and are linked by a single stream or a braided stream system. They form in a glacial trough where the glacier has carved multiple bedrock depressions in a row. When meltwater fills each depression, a series of lakes appears, with water flowing from one to the next along the connected drainage. The name comes from the way the lakes resemble beads on a rosary, lined up along the stream. This is different from a single deep lake created by glacier damming, a caldera lake formed by volcanic collapse, or a lake formed primarily by tectonic faulting.

6. Soft sediments are best sampled with a ___ to obtain undisturbed samples.

A. Piston corer

B. Densified piston sampler

C. Core barrel

D. Shelby tube

Soft sediments, especially cohesive clays and silts, require a sampler that can be pushed into the deposit with minimal disturbance to preserve the natural structure and water content. The Shelby tube is designed as a thin-walled tube that is driven into the soil, capturing a relatively intact cylindrical sample as it is withdrawn. This design minimizes disturbance to the sediment during retrieval, making it ideal for obtaining undisturbed samples for later testing. Other samplers tend to disturb the surface layers or collapse the structure more readily in soft materials: piston-type samplers and their variants can modify or compact the top portion of the sediment; while core barrels are more suited to harder materials and don't preserve the near-surface fabric of very soft deposits as well.

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7. What is the term for the pile of rocks that accumulates at the base of a cliff, chute, or slope?

A. Scree

B. Talus

C. Drift

D. Till

The pile of rocks at the base of a cliff, chute, or slope is known as a talus. This feature forms when rocks break off from the rock face and fall or slide downward due to gravity. The fragments accumulate at the bottom, creating an apron or cone-shaped deposit called talus, with pieces typically angular from the limited transport. Drift and till relate to glacial deposits and aren't the term used for a base-portion rock pile, while scree is a similar loose material on a slope and can be used interchangeably in casual speech, but the standard term for the base pile is talus.

8. The mineral with the chemical formula $K(AlSi_3O_8)$ corresponds to which potassium feldspar species?

A. Quartz

B. Orthoclase

C. Microcline

D. Sanidine

Potassium feldspars share the composition $KAlSi_3O_8$, but exist as different high- and low-temperature forms that differ in crystal structure and ordering. The high-temperature end-member is sanidine, which forms at elevated temperatures in igneous environments such as rhyolites. Even though orthoclase and microcline have the same ideal formula, they represent lower-temperature forms with varying degrees of structural ordering. Quartz, by contrast, is SiO_2 and not a potassium aluminosilicate. Therefore, the given formula best corresponds to sanidine.

9. In a regressive sediment sequence followed by delta development, which order from oldest to youngest is correct?

A. Shale, limestone and sandstone overlain by clay and marsh deposits

B. Limestone, shale and sandstone overlain by sand, clay and marsh deposits

C. Sandstone, limestone and shale overlain by marsh deposits

D. Marsh deposits overlain by sandstone, shale, and limestone

In a regressive sequence that is followed by delta development, the environment shifts from deeper, quieter waters to progressively shallower, more energetic settings, with deltaic deposits building on top. Limestone forms in relatively deep, clear marine conditions, so it represents the older, earlier-deposited units. As sea level falls and shorelines prograde, the environment becomes shallower and more clastic, yielding offshore shale and then nearshore sandstone. When the delta develops, its architecture stacks on top of these earlier deposits, producing deltaic sands and muds, along with marsh deposits behind the delta front. Therefore, the oldest to youngest order is limestone first, then shale and sandstone, overlain by sand, clay and marsh deposits. The other sequences violate this deep-to-shallow progression or place deltaic or marsh deposits beneath earlier marine rocks.

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10. What is the correct oldest-to-youngest sequence for a transgressive deposit sequence?

A. Sandstone, Limestone, Shale

B. Limestone, Shale, Sandstone

C. Shale, Limestone, Sandstone

D. Shale, Sandstone, Limestone

In a transgressive deposit sequence, sea level is rising, so environments shift toward deeper water over time at a given location. Shale forms in deeper, quieter waters, limestone in somewhat shallower open-marine conditions, and sandstone in nearshore, higher-energy settings. Therefore, the oldest sediments will be the deepest-water facies, followed by progressively shallower-water facies as time advances. This gives shale first, then limestone, and finally sandstone as the youngest.

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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://asbog1.examzify.com

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

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