# ASBOG FUNDAMENTALS OF GEOLOGY (FG) 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. What measure helps reduce soil erosion in a dam by managing seepage at the downstream toe?**

A. A downstream toe drain should be installed to reduce the risk of soil erosion in the dam

B. A downstream toe drain cannot reduce erosion

C. Increase permeability of downstream face

D. Remove toe drainage

**2. In sands and gravels labeled SW or GW, what does this indicate about sorting?**

A. Very well sorted

B. Poorly sorted

C. Well sorted

D. Uniformly graded

**3. If you drilled a vertical borehole through nearly horizontal beds offset by a thrust fault, what stratigraphic pattern would you expect with depth?**

A. Repetition of beds with depth

B. A single continuous layer without interruptions

C. Gradual thinning of beds with depth

D. No recognizable stratification

**4. In geotechnical investigations, what is the most important portion of a rock core log?**

A. The mineralogical analyses

B. The color description

C. The stratigraphic position

D. A description of the engineering characteristics

**5. In a granitic rock composed of amphibole, biotite, albite, andesine, and quartz, which mineral would weather first?**

A. Amphibole

B. Quartz

C. Andesine

D. Biotite

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**6. Which Mercalli intensity level is characterized by people may run outdoors, some chimneys may be broken, and considerable damage occurs to poorly built structures?**

A. IV

B. V

C. VI

D. VII

**7. A rock stratigraphic or lithostratigraphic unit is defined as what?**

A. The unit is lithologically homogeneous or contains a characteristic combination of rock types

B. The unit is defined by fossil assemblages

C. The unit is defined by grain size distribution alone

D. The unit is defined by color alone

**8. Given a strike of N35W, what is the azimuth of the strike measured clockwise from north?**

A. 325 degrees

B. 295 degrees

C. 55 degrees

D. 145 degrees

**9. Evaporitic deposition sequence (limestone, gypsum, halite) indicates deposition in which setting?**

A. A coal seam

B. A basaltic lava flow

C. A stratigraphic sequence including limestone, gypsum, and halite indicates evaporitic deposition

D. A long sequence of sandstone

**10. Layered intrusives may result from**

A. Fractional crystallization

B. Crystal nucleation

C. Assimilation

D. Crystal settling

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# Answers

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

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# Explanations

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**1. What measure helps reduce soil erosion in a dam by managing seepage at the downstream toe?**

A. A downstream toe drain should be installed to reduce the risk of soil erosion in the dam

B. A downstream toe drain cannot reduce erosion

C. Increase permeability of downstream face

D. Remove toe drainage

*Managing seepage at the downstream toe is essential because seepage can cause scour and even piping that destabilizes the dam's foundation and slope. Installing a downstream toe drain creates a controlled outlet for that seepage, lowering pore water pressures and the hydraulic gradient right at the toe. With seepage being collected and discharged away from the toe, the risk of soil erosion on the downstream slope is reduced, making the dam more stable overall. Increasing permeability of the downstream face would allow more seepage to flow toward the toe, raising erosion potential rather than reducing it. Removing toe drainage removes the protective path for seepage, increasing erosion risk. Saying a downstream toe drain cannot reduce erosion is incorrect because the drain is specifically designed to manage seepage and protect against erosion.*

**2. In sands and gravels labeled SW or GW, what does this indicate about sorting?**

A. Very well sorted

B. Poorly sorted

C. Well sorted

D. Uniformly graded

*Grain-size distribution governs sorting. The S or G tells you the grain size class (sand or gravel), and the W means well graded, which indicates a wide range of particle sizes across the distribution. When many different sizes are present, the material isn't uniform in size—so it's poorly sorted. Therefore, labeling sw or gw signals a broad mix of sizes, i.e., poor sorting.*

**3. If you drilled a vertical borehole through nearly horizontal beds offset by a thrust fault, what stratigraphic pattern would you expect with depth?**

A. Repetition of beds with depth

B. A single continuous layer without interruptions

C. Gradual thinning of beds with depth

D. No recognizable stratification

*When beds are nearly horizontal and a thrust fault offsets them, the fault places slices of the same stratigraphic sequence on top of one another. Drilling a vertical borehole through this stack will therefore intersect the same bed multiple times as you pass from one fault block to another, causing repetition of the same beds with depth. In other words, the borehole log shows the same lithologies appearing more than once as you go deeper because the fault has displaced blocks that contain the same layers. This contrasts with a single continuous layer, which would require no faulting to explain, or with gradual thinning or no recognizable stratification, which don't fit a scenario where faulting repositions identical beds at different depths.*

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**4. In geotechnical investigations, what is the most important portion of a rock core log?**

A. The mineralogical analyses

B. The color description

C. The stratigraphic position

D. A description of the engineering characteristics

*In geotechnical work, the practical goal is to predict how rock will behave under loads and during excavation, so the most important part of a rock core log is a thorough description of the engineering characteristics. This includes the rock's strength indicators and how it behaves as a structural material: intact rock strength (or indicators like point load, Schmidt hammer, or estimated UCS), rock quality and discontinuities (spacing, persistence, orientation, roughness, infill), weathering state, and groundwater behavior. Together these details tell you how the rock will deform, fail, or permit water flow, which directly drives design decisions for excavation methods, support systems, stability analysis, and dewatering. Mineralogical analyses and color descriptions, while useful for identification and lithology, do not by themselves determine how the rock will perform in a geotechnical sense. Stratigraphic position provides context about the sequence of units but is not the direct predictor of mechanical behavior. The engineering characteristics section translates the rock into actionable design parameters, making it the most critical portion for geotechnical applications.*

**5. In a granitic rock composed of amphibole, biotite, albite, andesine, and quartz, which mineral would weather first?**

A. Amphibole

B. Quartz

C. Andesine

D. Biotite

*Weathering rates depend on how chemically stable a mineral is under surface conditions. Quartz is exceptionally resistant because of its strong silicon-oxygen framework, so it tends to weather last. Feldspars, on the other hand, are more susceptible to chemical attack and break down to clay minerals and dissolved ions. Within the feldspars, calcium-rich plagioclase components weather more quickly than sodium-rich ones because the larger $Ca^{2+}$ ions distort the crystal structure and make hydrolysis easier. Andesine is a calcium-rich member of the plagioclase series, so it would start to weather before albite and before the hydrous minerals in the mix. Biotite and amphibole are hydrous silicates that weather, but their weathering typically lags behind the initial breakdown of feldspars in many environments. Therefore andesine would weather first in this granite.*

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**6. Which Mercalli intensity level is characterized by people may run outdoors, some chimneys may be broken, and considerable damage occurs to poorly built structures?**

A. IV

B. V

C. VI

D. VII

*The Mercalli intensity level focuses on visible effects and damage from shaking, not the energy of the quake. At this level, shaking is strong enough that basically everyone feels it, and people may run outdoors. Some chimneys can crack or break, and there is considerable damage to poorly built structures. This describes a moderate shaking intensity where ordinary buildings suffer noticeable harm, but not the widespread, severe destruction seen at higher levels. Lower levels wouldn't produce chimneys breaking or many people running outdoors, and higher levels would show far more extensive damage even to well-built structures.*

**7. A rock stratigraphic or lithostratigraphic unit is defined as what?**

A. The unit is lithologically homogeneous or contains a characteristic combination of rock types

B. The unit is defined by fossil assemblages

C. The unit is defined by grain size distribution alone

D. The unit is defined by color alone

*Focus on rock type. A lithostratigraphic unit is defined by its lithology—the actual rock types present and how they're arranged—so it's either uniform in composition or shows a distinctive, recognizable combination of rock types that can be traced laterally across a region. This is why mapping is based on the rocks themselves, not on fossils or texture alone. Fossils define different kinds of units (biostratigraphic or fossil zones), while grain size distribution or color can vary within a unit and don't by themselves establish it. A unit can include multiple rock types if their particular combination is distinctive, but it's the lithologic makeup that sets the boundary and name.*

**8. Given a strike of N35W, what is the azimuth of the strike measured clockwise from north?**

A. 325 degrees

B. 295 degrees

C. 55 degrees

D. 145 degrees

*Strike notation N35W means the line runs 35 degrees toward the west from due north. To convert that to an azimuth measured clockwise from north, remember azimuth increases as you rotate clockwise. Moving toward west is a counterclockwise motion from north, so you wrap around the circle: azimuth = 360 − 35 = 325 degrees. So the azimuth is 325 degrees. The other numbers would point in different quadrant directions (for example, 295 is N65W, 55 is N55E) or the opposite direction along the same line (145 is S35E). The 325-degree value correctly reflects the N35W strike when measured clockwise from north.*

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## 9. Evaporitic deposition sequence (limestone, gypsum, halite) indicates deposition in which setting?

A. A coal seam

B. A basaltic lava flow

C. A stratigraphic sequence including limestone, gypsum, and halite indicates evaporitic deposition

D. A long sequence of sandstone

*Evaporite deposition happens in a closed or restricted basin where water evaporates faster than it's replenished, causing salts to precipitate from the concentrating brines. The sequence limestone, followed by gypsum, then halite shows the water's salinity increasing over time. Limestone forms in more open carbonate conditions, but as evaporation rises, calcium sulfate precipitates as gypsum, and with even higher salinity, table salt (halite) precipitates. Seeing all three minerals in that order indicates an evaporitic setting such as a shallow, enclosed sea, a playa lake, or a sabkha in an arid climate where evaporation dominates and clastic input is limited. This wouldn't fit a coal swamp, a basaltic lava flow, or a predominantly sandstone sequence, which reflect very different environments.*

## 10. Layered intrusives may result from

A. Fractional crystallization

B. Crystal nucleation

C. Assimilation

D. Crystal settling

*Layered intrusions form when crystals separate from the melt by gravity and accumulate on the chamber floor, creating stacked layers of different minerals (a cumulate texture). As magma cools, dense early-forming crystals such as olivine and pyroxene settle downward, while lighter minerals may crystallize later and form higher layers. This gravity-driven settling builds the distinct stratified structure seen in many large igneous bodies. While fractional crystallization describes chemical changes as crystals are removed from the melt, the pronounced layering in these intrusions specifically comes from the physical sorting of crystals by settling. Crystal nucleation is just the initial formation of crystals, and assimilation involves adding surrounding rock to the melt, which tends to disturb rather than produce layered structures.*

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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://asbogfg.examzify.com

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

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