

# UPCAT Earth Science Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

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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 type of geological feature is most likely to be formed by convergent boundaries?**
  - A. Volcanic eruptions**
  - B. Mountain ranges**
  - C. Rift valleys**
  - D. Ocean basins**
  
- 2. What is a known effect of metamorphism on rocks?**
  - A. Decreased density**
  - B. Formation of larger crystals**
  - C. Granulation into fine particles**
  - D. Increased porosity**
  
- 3. What is the primary element consumed by main-sequence stars in fusion?**
  - A. Helium**
  - B. Oxygen**
  - C. Hydrogen**
  - D. Carbon**
  
- 4. Which of the following is a consequence of convergent plate boundaries?**
  - A. Seafloor spreading**
  - B. Formation of ridges**
  - C. Volcanic eruptions**
  - D. All of the above**
  
- 5. What is precipitation in meteorological terms?**
  - A. The movement of air masses**
  - B. Joining of several small cloud droplets**
  - C. The formation of hurricanes**
  - D. The cooling of ocean waters**

**6. What primarily drives the circular movement of water in ocean currents?**

- A. Temperature differences**
- B. Coriolis Effect**
- C. Wind patterns**
- D. Seafloor geography**

**7. What is the primary function of the stratosphere in Earth's atmosphere?**

- A. Site of most weather phenomena**
- B. Site of absorption of ultraviolet radiation**
- C. Location of air mass formation**
- D. Zone where temperature decreases with altitude**

**8. What layer of the Earth is characterized as weaker and liquid?**

- A. Lithosphere**
- B. Asthenosphere**
- C. Mesosphere**
- D. Core**

**9. Which type of volcano is characterized by symmetrical cones with layers of lava and pyroclastic material?**

- A. Composite Volcano**
- B. Cinder Cone Volcano**
- C. Shield Volcano**
- D. Fissure Volcano**

**10. Which of the following describes the characteristics of a cyclone?**

- A. A high-pressure system with clear skies**
- B. An area with stable air and no precipitation**
- C. A rotating air mass around a low-pressure center**
- D. A rapid drop in temperature and humidity**

## **Answers**

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

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## **Explanations**

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**1. What type of geological feature is most likely to be formed by convergent boundaries?**

- A. Volcanic eruptions**
- B. Mountain ranges**
- C. Rift valleys**
- D. Ocean basins**

Convergent boundaries are regions where two tectonic plates move toward each other, resulting in a collision. This interaction can lead to a variety of geological features, but one of the most significant outcomes is the formation of mountain ranges. When two continental plates converge, neither plate is subducted due to their similar densities, and instead, they crumple and fold. This process creates extensive mountain ranges, as seen in the Himalayas, which were formed by the collision of the Indian and Eurasian plates. The immense force of the colliding plates causes the crust to thicken and uplift, generating prominent mountain features. While volcanic eruptions can also occur at convergent boundaries, they are primarily associated with subduction zones where an oceanic plate is forced beneath a continental plate. Rift valleys are features formed by divergent boundaries, where tectonic plates move apart, and ocean basins are typically associated with these divergent boundaries as well. Thus, the formation of mountain ranges is the most characteristic feature resulting from the collision of plates at convergent boundaries.

**2. What is a known effect of metamorphism on rocks?**

- A. Decreased density**
- B. Formation of larger crystals**
- C. Granulation into fine particles**
- D. Increased porosity**

Metamorphism is the process by which existing rocks undergo a transformation due to changes in temperature, pressure, and the presence of chemically active fluids. One significant effect of this process is the formation of larger crystals in the rocks. When rocks are subjected to high pressures and temperatures over time, the minerals within them can recrystallize, allowing for the growth of larger mineral crystals. This is particularly evident in metamorphic rocks such as gneiss and schist, where foliation and the alignment of minerals often result in the emergence of larger crystals compared to their protolith (the original rock). This change is driven by the migration and rearrangement of mineral components, which can lead to improved crystal structure, size, and overall texture of the metamorphic rock. Other options suggest effects that do not align with the typical outcomes of metamorphism. For instance, decreased density and increased porosity are generally not characteristic of this process. Instead, metamorphic rocks tend to become denser due to the recrystallization of minerals. Granulation into fine particles describes a process more related to weathering and erosion, rather than the solid-state changes that occur during metamorphism. Thus, the formation of larger crystals is a recognized hallmark of metamorphic processes.

**3. What is the primary element consumed by main-sequence stars in fusion?**

- A. Helium**
- B. Oxygen**
- C. Hydrogen**
- D. Carbon**

Main-sequence stars primarily fuse hydrogen into helium in their cores. This process, known as hydrogen burning, occurs through nuclear fusion where hydrogen nuclei (protons) combine under extreme temperatures and pressures. The energy released during this fusion process is what powers the star and provides the heat and light that we observe. Hydrogen is the most abundant element in the universe, making it the primary fuel for the nuclear reactions that sustain stars during the main sequence phase of their life cycle. As stars evolve, they may begin to fuse heavier elements, but during the main-sequence stage, hydrogen remains the dominant element involved in these fusion processes. This is crucial for understanding stellar evolution, as the duration of the main sequence phase and the eventual transition to later stages of stellar development depend largely on the available hydrogen fuel. Other elements mentioned, such as helium, oxygen, and carbon, play roles in later stages of stellar evolution once a star has exhausted its hydrogen supply and begins fusing heavier elements, but they are not the primary elements consumed during the main sequence phase.

**4. Which of the following is a consequence of convergent plate boundaries?**

- A. Seafloor spreading**
- B. Formation of ridges**
- C. Volcanic eruptions**
- D. All of the above**

Convergent plate boundaries occur where two tectonic plates move toward each other. This interaction is significant because it can lead to the formation of mountain ranges, deep ocean trenches, and volcanic activity. One of the primary consequences of these boundaries is volcanic eruptions, particularly in scenarios where one tectonic plate subducts beneath another. As the descending plate melts into the mantle, it generates magma that can lead to the formation of volcanoes, which may erupt explosively or effusively depending on various factors. In contrast, seafloor spreading and the formation of ridges are primarily associated with divergent plate boundaries, where plates move apart. Therefore, while the other options relate to processes that occur in different tectonic settings, volcanic eruptions specifically result from the dynamics of convergent boundaries. This makes the fifth answer focused on volcanic activity the most accurate reflection of what occurs at convergent boundaries.

## 5. What is precipitation in meteorological terms?

- A. The movement of air masses
- B. Joining of several small cloud droplets**
- C. The formation of hurricanes
- D. The cooling of ocean waters

Precipitation in meteorological terms refers to any form of water, liquid or solid, that falls from the atmosphere to the Earth's surface. This process primarily begins with the joining of several small cloud droplets. As these droplets coalesce, they grow larger; once they become heavy enough, gravity causes them to fall as precipitation, which can include rain, snow, sleet, or hail. The process of cloud droplet formation and growth is essential in the water cycle and affects weather patterns. By understanding that precipitation is the result of cloud droplet aggregation, one can see how conditions within the atmosphere, including temperature and humidity, influence weather events. The other options refer to separate meteorological phenomena. The movement of air masses is related to wind patterns and climate, the formation of hurricanes involves complex systems of wind and pressure differences, and the cooling of ocean waters involves temperature changes but does not directly correlate with the definition of precipitation.

## 6. What primarily drives the circular movement of water in ocean currents?

- A. Temperature differences
- B. Coriolis Effect**
- C. Wind patterns
- D. Seafloor geography

The circular movement of water in ocean currents is primarily driven by the Coriolis Effect, which is a result of the Earth's rotation. As the Earth spins, moving objects, including water, will appear to curve rather than move in a straight line. This effect influences the direction of ocean currents, causing them to flow in circular patterns, particularly in large gyres found in the world's oceans. For example, in the Northern Hemisphere, the Coriolis Effect causes moving water to turn to the right, resulting in a clockwise rotation of currents. Conversely, in the Southern Hemisphere, the water turns to the left, leading to a counterclockwise rotation. This mechanism plays a crucial role in determining the overall circulation patterns of the oceans, influencing everything from climate to marine life distribution. While temperature differences, wind patterns, and seafloor geography do play significant roles in influencing ocean currents, they are secondary factors when it comes to the predominant driving force for the circular motion of water. Temperature differences can contribute to density variations, leading to thermohaline circulation, and wind patterns are essential for initiating surface currents. Still, it is ultimately the Coriolis Effect that governs the direction and movement of these currents on a larger scale.

**7. What is the primary function of the stratosphere in Earth's atmosphere?**

- A. Site of most weather phenomena**
- B. Site of absorption of ultraviolet radiation**
- C. Location of air mass formation**
- D. Zone where temperature decreases with altitude**

The primary function of the stratosphere is its role in the absorption of ultraviolet (UV) radiation. This layer of the atmosphere, which lies above the troposphere and below the mesosphere, is characterized by the presence of ozone. Ozone molecules absorb a significant portion of the Sun's harmful UV radiation, preventing it from reaching the Earth's surface. This protective function is vital for maintaining life on Earth, as excessive UV radiation can lead to various health issues, including skin cancer and cataracts, as well as detrimental effects on ecosystems and wildlife. The other options represent different characteristics or functions of other layers or aspects of the atmosphere. The troposphere is primarily where most weather phenomena occur, making it the layer directly involved in meteorological conditions. Air mass formation primarily occurs in the lower layers of the atmosphere, particularly in the troposphere. The description of temperature decreasing with altitude is characteristic of the troposphere as well, while the stratosphere actually displays a temperature inversion where temperatures increase with altitude due to the ozone layer. Thus, the role of the stratosphere in absorbing UV radiation is what distinguishes it as the correct choice in this context.

**8. What layer of the Earth is characterized as weaker and liquid?**

- A. Lithosphere**
- B. Asthenosphere**
- C. Mesosphere**
- D. Core**

The asthenosphere is characterized as a weaker and semi-fluid layer located beneath the rigid lithosphere. This region extends from the upper mantle, approximately 100 to 200 kilometers deep, and is composed of partially molten rock that allows for the movement of tectonic plates. The viscous nature of the asthenosphere facilitates convection currents, which play a crucial role in plate tectonics and contribute to the dynamic processes of the Earth's crust. In contrast, the lithosphere is rigid and comprises the uppermost portion of the mantle and the Earth's crust. The mesosphere, found beneath the asthenosphere, consists of denser, more solid materials and behaves in a more rigid manner. The Earth's core, while liquid in its outer section, is mainly composed of iron and nickel and exhibits different characteristics than the asthenosphere. Thus, the asthenosphere's unique properties of being weaker and partially molten set it apart from the other layers of the Earth.

**9. Which type of volcano is characterized by symmetrical cones with layers of lava and pyroclastic material?**

- A. Composite Volcano**
- B. Cinder Cone Volcano**
- C. Shield Volcano**
- D. Fissure Volcano**

The type of volcano characterized by symmetrical cones formed from alternating layers of lava flow and pyroclastic materials is the composite volcano, also known as stratovolcanoes. These formations are typically steep-sided and exhibit a conical shape due to the many eruptions over time that create distinct layers. Composite volcanoes erupt eruptions that can range from explosive to effusive, resulting in the build-up of both lava and tephra. This layered structure contributes to their characteristic steep profile. The eruptions can produce pyroclastic flows, ash fall, and lava flows, which add to the complexity and beauty of these volcanoes. In contrast, cinder cone volcanoes are typically smaller and have a simpler structure, composed mainly of small fragments of lava that accumulate around a single vent. Shield volcanoes have broad, gentle slopes built primarily from low-viscosity lava that flows over great distances, creating a shield-like profile. Fissure volcanoes do not form traditional volcano structures; instead, they are characterized by cracks in the Earth's surface where lava erupts to form extensive lava fields. Each of these types has distinct features that differentiate them from composite volcanoes.

**10. Which of the following describes the characteristics of a cyclone?**

- A. A high-pressure system with clear skies**
- B. An area with stable air and no precipitation**
- C. A rotating air mass around a low-pressure center**
- D. A rapid drop in temperature and humidity**

The characteristics of a cyclone are defined by a rotating air mass around a low-pressure center. Cyclones form when there is a significant difference in atmospheric pressure, leading to the movement of air. As air converges towards the low-pressure area, it begins to spiral due to the Coriolis effect, creating a characteristic cyclone structure with distinct wind patterns. In contrast, the other options describe phenomena that do not align with the definition of a cyclone. High-pressure systems are typically associated with calm and clear weather, not the turbulent conditions found in cyclones. Stable air with no precipitation refers to anticyclonic conditions, which are the opposite of cyclonic activity. A rapid drop in temperature and humidity might indicate a passing weather front rather than the development of a cyclone, which usually brings increased precipitation and chaotic wind systems. Thus, the essence of a cyclone is its rotation around a low-pressure center, which distinguishes it from other meteorological phenomena.

# 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://upcatearthscience.examzify.com>**

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

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