

UPCAT 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 is the initial step when questions arise from observed unusual phenomena?**
 - A. Identify and clearly state the problem**
 - B. Formulate a hypothesis**
 - C. Gather information related to the problem**
 - D. Test the hypothesis**

- 2. Which temperature scale is often used in cooking?**
 - A. Fahrenheit**
 - B. Kelvin**
 - C. Celsius**
 - D. Both Celsius and Fahrenheit**

- 3. Which type of energy harnesses the Earth's internal heat for power generation?**
 - A. Solar Energy**
 - B. Geothermal Energy**
 - C. Hydroelectric Energy**
 - D. Nuclear Energy**

- 4. What attitude involves perseverance in studying and research?**
 - A. Hard Work and Perseverance**
 - B. Consistency**
 - C. Determination**
 - D. Focus**

- 5. Which formula represents the relationship between density, mass, and volume?**
 - A. $D = m/v$**
 - B. $D = v/m$**
 - C. $D = m + v$**
 - D. $D = m \times v$**

- 6. What is the name of the boundary between the lower mantle and the core, characterized by a change in seismic wave behavior?**
- A. Gutenberg Discontinuity**
 - B. Mohorovicic Discontinuity**
 - C. Asthenosphere Boundary**
 - D. Mesosphere Boundary**
- 7. What term describes the rigid layer made up of the uppermost part of the mantle and the Earth's crust?**
- A. Asthenosphere**
 - B. Lithosphere**
 - C. Mesosphere**
 - D. Outer Core**
- 8. Which type of volcano has a dome shape and is built from very thick lava?**
- A. Dome Volcano**
 - B. Shield Volcano**
 - C. Caldera Volcano**
 - D. Composite Volcano**
- 9. What term describes factors that change as a result of changes in the independent variable?**
- A. Control variables**
 - B. Dependent variables**
 - C. Independent variables**
 - D. Test variables**
- 10. What type of energy is carried by an electromagnetic wave?**
- A. Chemical Energy**
 - B. Electrical Energy**
 - C. Radiant Energy**
 - D. Thermal Energy**

Answers

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

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Explanations

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1. What is the initial step when questions arise from observed unusual phenomena?

- A. Identify and clearly state the problem**
- B. Formulate a hypothesis**
- C. Gather information related to the problem**
- D. Test the hypothesis**

The initial step when questions arise from observed unusual phenomena is to identify and clearly state the problem. This step is crucial because it sets the foundation for any scientific inquiry. Clearly stating the problem helps to frame the observation in a way that is specific and measurable, allowing researchers to focus on what is truly being questioned. By articulating the problem, scientists can determine the scope of their investigation and ensure that they are addressing the right questions. This clarity is essential for effective research, as it guides subsequent steps such as gathering information, formulating a hypothesis, and testing that hypothesis. Without a well-defined problem, the investigation may lack direction and purpose, leading to ambiguous conclusions or ineffective experimentation. Identifying the problem acts as a critical starting point for the scientific method, making it the foundational step in the process of inquiry.

2. Which temperature scale is often used in cooking?

- A. Fahrenheit**
- B. Kelvin**
- C. Celsius**
- D. Both Celsius and Fahrenheit**

In cooking, both the Celsius and Fahrenheit scales are commonly used, which makes this answer appropriate. Celsius is widely used in most countries, especially for recipes from Europe and the rest of the world, as it is part of the metric system. Many culinary applications, such as baking bread or roasting meat, often provide temperatures in Celsius. Fahrenheit, on the other hand, is primarily used in the United States. Many American recipes will list cooking temperatures in Fahrenheit, making it important for home cooks in that region to be familiar with this scale. Recognizing that different parts of the world use different temperature scales for cooking allows chefs and home cooks to adapt recipes and ensure that their cooking techniques are successful, regardless of the original temperature format provided. This adaptability is why both Celsius and Fahrenheit are considered appropriate for cooking.

3. Which type of energy harnesses the Earth's internal heat for power generation?

- A. Solar Energy**
- B. Geothermal Energy**
- C. Hydroelectric Energy**
- D. Nuclear Energy**

Geothermal energy is the type of energy that harnesses the Earth's internal heat for power generation. This energy is derived from the natural heat present beneath the Earth's surface, which is a result of the decay of radioactive materials and the residual heat from the planet's formation. By tapping into this geothermal heat, it is possible to produce steam that can drive turbines to generate electricity. Geothermal energy is considered a sustainable and reliable source of energy, as it can provide a continuous supply of power and is less dependent on weather conditions compared to other renewable sources. Additionally, it has a relatively low environmental impact when managed correctly, making it a viable option for reducing greenhouse gas emissions and providing clean energy. The other energy types mentioned, such as solar energy, hydroelectric energy, and nuclear energy, operate based on different principles and sources, such as sunlight, flowing water, and nuclear reactions, respectively, rather than the Earth's internal heat.

4. What attitude involves perseverance in studying and research?

- A. Hard Work and Perseverance**
- B. Consistency**
- C. Determination**
- D. Focus**

The option that emphasizes perseverance in studying and research is associated with hard work and perseverance. This attitude is characterized by a strong commitment to putting in the necessary effort and ongoing dedication over time, despite challenges or obstacles. In the context of studying and research, hard work and perseverance enable individuals to push through difficulties, maintain motivation, and engage deeply with their subjects. This mindset helps individuals to not only pursue their academic goals but also navigate setbacks and maintain progress toward achieving their objectives. Perseverance is essential in academic endeavors, as it allows students to continue striving for understanding and mastery of complex topics, even when the material becomes challenging or when immediate results are not apparent. This attitude fosters resilience, encouraging learners to adopt a long-term perspective on their educational journey.

5. Which formula represents the relationship between density, mass, and volume?

- A. $D = m/v$**
- B. $D = v/m$**
- C. $D = m + v$**
- D. $D = m \times v$**

The formula that accurately represents the relationship between density, mass, and volume is $D = m/v$. This formula states that density (D) is equal to mass (m) divided by volume (v). Density is a measure of how much mass is contained in a given volume of a substance. It reflects how tightly packed the particles are in a material. When you divide the mass of a substance by its volume, you obtain the density, which is often expressed in units like grams per cubic centimeter (g/cm^3) or kilograms per cubic meter (kg/m^3). Understanding this relationship is crucial in various scientific fields, including physics, chemistry, and engineering, as it helps in identifying materials and predicting how they will behave under different conditions. The incorrect options do not accurately express the relationship between these three variables in a scientifically valid manner, hence reinforcing the validity of the correct formula.

6. What is the name of the boundary between the lower mantle and the core, characterized by a change in seismic wave behavior?

- A. Gutenberg Discontinuity**
- B. Mohorovicic Discontinuity**
- C. Asthenosphere Boundary**
- D. Mesosphere Boundary**

The boundary between the lower mantle and the core is known as the Gutenberg Discontinuity. This boundary is significant because it marks a drastic change in the materials and characteristics of the Earth's interior. Below this discontinuity, seismic waves behave differently due to the transition from the solid lower mantle to the liquid outer core. The density and composition of materials change considerably at this interface, which affects how seismic waves travel through the Earth. The other options refer to different seismic boundaries. The Mohorovicic Discontinuity, often called the Moho, is the boundary between the Earth's crust and the underlying mantle, where seismic wave speeds increase significantly due to the transition from less dense rocks of the crust to denser rocks of the mantle. The Asthenosphere Boundary refers to the upper part of the mantle that is partially molten and allows for the movement of tectonic plates. The Mesosphere Boundary typically refers to the region within the mantle itself, specifically between different layers of the mantle. Each of these boundaries has its own unique characteristics that distinguish it from the Gutenberg Discontinuity.

7. What term describes the rigid layer made up of the uppermost part of the mantle and the Earth's crust?

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

The term that describes the rigid layer made up of the uppermost part of the mantle and the Earth's crust is "lithosphere." The lithosphere is a solid layer that includes both the crust, which is the outermost layer of the Earth, and the upper portion of the mantle that behaves in a rigid manner. It is characterized by its strength and ability to maintain its shape under pressure, distinguishing it from other layers such as the asthenosphere below it, which is plastic and capable of flow. Understanding the composition of the lithosphere is important because it plays a critical role in tectonic processes, including plate tectonics, where the movement of these rigid plates can lead to geological phenomena like earthquakes and volcanic activity. The lithosphere is integral to the Earth's geology and influences surface processes due to its interaction with the hydrosphere, atmosphere, and biosphere.

8. Which type of volcano has a dome shape and is built from very thick lava?

- A. Dome Volcano**
- B. Shield Volcano**
- C. Caldera Volcano**
- D. Composite Volcano**

The type of volcano characterized by a dome shape and constructed from very thick lava is indeed a dome volcano. Dome volcanoes are formed when highly viscous lava is expelled from a central vent, leading to a steep, rounded profile. The thick lava doesn't flow far from the vent, resulting in a pile-up of material that creates the dome shape. This contrasts with other types of volcanoes, where the lava's viscosity varies, leading to different shapes and structures. For example, shield volcanoes are broad and gently sloped, formed from fluid lava that can travel great distances before solidifying. Composite volcanoes, on the other hand, are characterized by layered eruptions of both lava and ash, resulting in a more conical shape. Calderas are large depressions formed after the collapse of a volcano following a significant eruption, not primarily built up by thick lava. Each of these structures is influenced by the nature of the lava flow and the eruption style, highlighting the distinct characteristics of dome volcanoes.

9. What term describes factors that change as a result of changes in the independent variable?

- A. Control variables**
- B. Dependent variables**
- C. Independent variables**
- D. Test variables**

The term that describes factors that change as a result of changes in the independent variable is dependent variables. In an experiment, the dependent variable is the one that researchers measure to see if it is affected by manipulation of the independent variable. For example, if a scientist is studying how different amounts of sunlight affect plant growth, the growth of the plants (dependent variable) will change based on the amount of sunlight they receive (independent variable). This relationship allows researchers to determine the effects of one variable on another, making it essential to identify dependent variables in any scientific study. Control variables, on the other hand, are factors that are kept constant to ensure that any observed changes in the dependent variable are solely due to the manipulation of the independent variable. Independent variables are those that the experimenter changes intentionally to observe effects. Test variables is not a standard term in this context and does not specifically refer to any particular type of variable in scientific experiments.

10. What type of energy is carried by an electromagnetic wave?

- A. Chemical Energy**
- B. Electrical Energy**
- C. Radiant Energy**
- D. Thermal Energy**

Electromagnetic waves carry radiant energy, which is the energy of electromagnetic radiation. This type of energy is associated with the electromagnetic spectrum, which includes visible light, radio waves, microwaves, infrared radiation, ultraviolet radiation, X-rays, and gamma rays. Radiant energy is characterized by the ability of electromagnetic waves to travel through the vacuum of space, which enables them to transmit energy without requiring a medium. For example, sunlight is a form of radiant energy that travels through space to reach Earth. When these waves interact with matter, they can be absorbed and converted into other forms of energy, such as thermal energy, but the original energy they carry is classified as radiant energy. The other types of energy listed do not accurately describe the nature of the energy in electromagnetic waves. Chemical energy pertains to the energy stored in the bonds of chemical compounds, electrical energy involves the movement of electrons through a conductor, and thermal energy is related to the energy of the motion of particles within a substance. Therefore, radiant energy is the most appropriate classification for the energy carried by electromagnetic waves.

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://upcatscience.examzify.com>

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

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