

TEXES SCIENCE 7-12 (236) PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	15

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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 term describes the moment when objects collide with the Earth's atmosphere?**
 - A. Meteor
 - B. Astronaut
 - C. Meteoroid
 - D. Asteroid

- 2. What is the primary role of a vacuole in a cell?**
 - A. Generate energy
 - B. Store materials such as water and nutrients
 - C. Facilitate protein synthesis
 - D. Transport substances within the cell

- 3. What type of mirror produces an image that is upright and larger than reality when viewed up close?**
 - A. Convex mirror
 - B. Concave mirror
 - C. Flat mirror
 - D. Polarizing mirror

- 4. Which ion has a charge of -1?**
 - A. Carbonate
 - B. Phosphate
 - C. Chlorate
 - D. Cation

- 5. Which phases make up interphase?**
 - A. G1, G2, M
 - B. G1, S, G2
 - C. S, G2, M
 - D. G2, M, G1

6. What structure is composed of hollow rods made of tubulin proteins?

- A. Microfilaments
- B. Microtubules
- C. Centrioles
- D. Intermediate filaments

7. What is the lithosphere primarily composed of?

- A. Crust and upper mantle
- B. Crust and inner core
- C. Upper mantle and lower mantle
- D. Inner core and outer core

8. During which phase of meiosis does synapsis occur?

- A. Prophase I
- B. Metaphase I
- C. Telophase II
- D. Anaphase I

9. What type of ion is categorized as a cation?

- A. Negatively charged ion
- B. Positively charged ion
- C. Neutral ion
- D. All ions

10. What defines a biome?

- A. Only the geographical features of an area
- B. A group of ecosystems sharing similar climates and organisms
- C. A single population within a specific area
- D. A generic term for any habitat

Answers

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

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Explanations

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1. What term describes the moment when objects collide with the Earth's atmosphere?

- A. Meteor**
- B. Astronaut
- C. Meteoroid
- D. Asteroid

The moment when objects collide with the Earth's atmosphere is referred to as a meteor. This term specifically describes the phenomenon that occurs when a meteoroid—a small rocky or metallic body in space—enters the Earth's atmosphere and produces a visible streak of light due to the intense heat generated by friction with the atmospheric gases. As the meteoroid travels at high speeds, it heats up and glows, creating what is commonly known as a "shooting star" or meteor. In contrast, the term meteoroid denotes the object itself before it enters the atmosphere, while an asteroid is a much larger space rock that orbits the Sun, typically found in the asteroid belt between Mars and Jupiter. An astronaut refers to a human who is trained to travel and work in space, which does not pertain to the concept of objects entering the atmosphere. Each of these terms has distinct meanings related to space and atmospheric entry, making "meteor" the accurate choice for the question asked.

2. What is the primary role of a vacuole in a cell?

- A. Generate energy
- B. Store materials such as water and nutrients**
- C. Facilitate protein synthesis
- D. Transport substances within the cell

The primary role of a vacuole in a cell is to store materials such as water and nutrients. Vacuoles are membrane-bound sacs found in both plant and animal cells, though they are more prominent in plant cells. In plants, the large central vacuole serves several functions, including maintaining turgor pressure, which helps keep the plant upright and supports its structure. Additionally, vacuoles can store ions, waste products, and other substances that the cell may need to maintain homeostasis or to use later. The storage capacity of vacuoles allows the cell to manage various substances efficiently, making them essential for overall cellular function.

3. What type of mirror produces an image that is upright and larger than reality when viewed up close?

- A. Convex mirror
- B. Concave mirror**
- C. Flat mirror
- D. Polarizing mirror

A concave mirror is the type that produces an upright and enlarged image when an object is placed close to the mirror. This phenomenon occurs because a concave mirror converges light rays that hit its surface. When an object is located nearer than the focal point of the mirror, the reflected rays diverge, leading the brain to interpret them as originating from a virtual image behind the mirror. This virtual image appears larger and upright compared to the actual object. In contrast, convex mirrors always produce images that are diminished and upright, making them useful for wide-angle viewing but not for enlarging images. Flat mirrors create images that are the same size as the object and are also upright, but they do not produce magnified images. Polarizing mirrors serve a different function by reducing glare and do not significantly alter the size of images.

4. Which ion has a charge of -1?

- A. Carbonate
- B. Phosphate
- C. Chlorate**
- D. Cation

The ion that has a charge of -1 is Chlorate. Chlorate is a polyatomic ion with the chemical formula ClO_3^- , indicating that it carries a negative one charge. This characteristic is key when discussing ionic compounds and their properties, as it helps in understanding how ions interact in chemical reactions and form compounds. To provide some context, while carbonate (which has a -2 charge, CO_3^{2-}) and phosphate (which has a -3 charge, PO_4^{3-}) are both negatively charged polyatomic ions, they carry different charges than chlorate. A cation, by definition, has a positive charge, which further confirms that chlorate is the only ion among the choices listed with a -1 charge.

5. Which phases make up interphase?

- A. G1, G2, M
- B. G1, S, G2**
- C. S, G2, M
- D. G2, M, G1

Interphase is a critical part of the cell cycle where the cell prepares for division and comprises three distinct phases: G1 (Gap 1), S (Synthesis), and G2 (Gap 2). During the G1 phase, the cell grows and carries out its normal metabolic processes, including protein synthesis and organelle production, while also preparing for DNA replication. Next, in the S phase, the cell replicates its DNA, ensuring that each daughter cell will receive an identical set of chromosomes. Finally, in the G2 phase, the cell continues to grow and produces proteins necessary for cell division, as well as checks for any errors in DNA replication to ensure that the cell is ready for the upcoming mitotic phase. This sequence of events within interphase is essential for proper cell function and division, making option B the correct response. The other choices incorrectly incorporate the mitotic phase (M phase), which is not part of interphase, as it represents the process of cell division itself, not the preparatory stages.

6. What structure is composed of hollow rods made of tubulin proteins?

- A. Microfilaments
- B. Microtubules**
- C. Centrioles
- D. Intermediate filaments

The structure composed of hollow rods made of tubulin proteins is known as microtubules. Microtubules are one of the three main components of the cytoskeleton in eukaryotic cells, alongside microfilaments and intermediate filaments. They play critical roles in various cellular functions, including maintaining cell shape, enabling cellular motility through structures like cilia and flagella, and facilitating cell division by forming the mitotic spindle. The hollow nature of microtubules is significant because it allows them to resist compression and provides the necessary structural integrity to the cells. Additionally, they are dynamic structures that can rapidly grow and shrink, allowing cells to adapt to changing physiological situations swiftly. While centrioles are made of microtubules and play a significant role in cell division as part of the centrosome, they are specific structures rather than general components. Microfilaments, on the other hand, are composed of actin and are involved in muscle contraction and cell movement, and intermediate filaments consist of various proteins that provide tensile strength to cells. Each of these structures has distinct characteristics and functions, highlighting the unique contribution of microtubules in the cell.

7. What is the lithosphere primarily composed of?

- A. Crust and upper mantle
- B. Crust and inner core
- C. Upper mantle and lower mantle
- D. Inner core and outer core

The lithosphere is primarily composed of the Earth's crust and the uppermost part of the mantle. It encompasses the rigid outer layer of the Earth, which is where tectonic plates are found. This layer is solid, brittle, and is critical for understanding geological processes such as plate tectonics, earthquakes, and volcanic activity. The crust consists of the various types of rock that make up the continents and the ocean floors, while the upper mantle is made of partially molten rock that is solid enough to be considered part of the lithosphere. Together, these layers define the lithosphere and contribute to the movement and interaction of tectonic plates on the Earth's surface. Other combinations mentioned do not accurately define the lithosphere. The inner and outer cores are part of the Earth's deeper structure, and the lower mantle is much more ductile and not included in the lithosphere, which is characterized by its rigidity. Understanding the composition of the lithosphere is fundamental for studying Earth's geology and tectonic mechanics.

8. During which phase of meiosis does synapsis occur?

- A. Prophase I
- B. Metaphase I
- C. Telophase II
- D. Anaphase I

Synapsis occurs during Prophase I of meiosis, which is a crucial process in the formation of gametes. During synapsis, homologous chromosomes, each consisting of two sister chromatids, come together and align closely along their lengths. This pairing allows for the exchange of genetic material between chromatids through a process called crossover or recombination. The significance of synapsis lies in its role in increasing genetic diversity. By allowing homologous chromosomes to exchange segments of DNA, synapsis contributes to the shuffling of genetic information, which is essential for evolution and adaptation in populations. This process is vital for ensuring that the resulting gametes contain a unique combination of genes, promoting variability in the offspring. Understanding the phases of meiosis is important; while other provided options refer to different stages where specific activities take place, none involve the crucial homologous pairing that defines synapsis.

9. What type of ion is categorized as a cation?

- A. Negatively charged ion
- B. Positively charged ion
- C. Neutral ion
- D. All ions

A cation is defined as a positively charged ion, which means it has lost one or more electrons. This loss of electrons results in a net positive charge because protons (which have a positive charge) outnumber the remaining electrons (which have a negative charge). Cations play significant roles in various chemical reactions and are essential in many biological processes, such as nerve transmission and muscle contraction. In contrast, negatively charged ions, also known as anions, have gained electrons, resulting in a net negative charge. Neutral ions, on the other hand, have an equal number of protons and electrons, resulting in no overall charge. The option that includes all ions is too broad since it encompasses both cations and anions, but the specific term "cation" refers exclusively to ions with a positive charge.

10. What defines a biome?

- A. Only the geographical features of an area
- B. A group of ecosystems sharing similar climates and organisms**
- C. A single population within a specific area
- D. A generic term for any habitat

A biome is defined as a large geographical area characterized by specific climate conditions, distinct plant and animal species, and similar ecological communities. The correct answer highlights that a biome comprises a group of ecosystems that share these similar climatic conditions and types of organisms. For example, the desert biome includes various ecosystems that all have adapted to arid conditions and feature similar flora and fauna suited to survive in low water availability. The emphasis on shared climates and organisms helps to delineate biomes from other ecological classifications. Recognizing the interconnectedness of ecosystems within a biome is crucial, as it reflects how various living organisms interact with their environment in similar ways despite being part of different ecosystems. This nuanced understanding distinguishes biomes from the other options, which lack the comprehensive definition that considers both ecological interactions and climatic influences.

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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://texesscience7to12.examzify.com>

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

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