

SDI Introduction to Physical Science (SC1-101) Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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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	16

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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 definition of average velocity?**
 - A. It is the total distance divided by total time.**
 - B. It is the change in displacement over time.**
 - C. It is the distance travelled in one segment of the path.**
 - D. It is the initial speed of an object.**
- 2. What is the phenomenon called when two waves meet and interact with each other?**
 - A. Refraction**
 - B. Diffraction**
 - C. Interference**
 - D. Reflection**
- 3. What is a solution?**
 - A. A heterogeneous mixture of two or more substances**
 - B. A homogeneous mixture of two or more substances**
 - C. An element mixed with a compound**
 - D. A pure substance**
- 4. What is defined as "a concise statement about a fundamental relationship in nature"?**
 - A. Theory**
 - B. Hypothesis**
 - C. Law**
 - D. Principle**
- 5. Which of the following best defines a base in chemistry?**
 - A. A substance that increases the temperature of a solution**
 - B. A substance that donates protons in a chemical reaction**
 - C. A substance that accepts protons or donates hydroxide ions**
 - D. A reactive compound that forms salts**

6. When a net force on a moving object increases, the object will do what?

- A. Remain at rest**
- B. Exhibit a change in speed and/or direction**
- C. Stop immediately**
- D. Experience no change**

7. What is the charge of a proton?

- A. Negative**
- B. No charge**
- C. Neutral**
- D. Positive**

8. What is the purpose of a vector diagram in physics?

- A. To show scalar quantities only**
- B. To represent forces and their direction**
- C. To demonstrate numerical values only**
- D. To illustrate motion graphs**

9. Which science is primarily concerned with the composition, structure, properties, and reactions of matter?

- A. Physics**
- B. Biology**
- C. Chemistry**
- D. Geology**

10. What is the freezing point of water on the Fahrenheit scale?

- A. 0 degrees**
- B. 32 degrees**
- C. 100 degrees**
- D. -32 degrees**

Answers

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

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Explanations

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1. What is the definition of average velocity?

- A. It is the total distance divided by total time.
- B. It is the change in displacement over time.**
- C. It is the distance travelled in one segment of the path.
- D. It is the initial speed of an object.

Average velocity is defined as the change in displacement over time. Displacement refers to the overall change in position of an object, taking into account its initial and final positions, and is a vector quantity, meaning it has both magnitude and direction. The average velocity calculation involves determining how far an object has moved from its starting point to its ending point, divided by the total time taken for that journey. This definition reflects the concept that average velocity gives a more accurate representation of an object's overall motion compared to simply looking at distance traveled, especially when the path taken is not a straight line. By focusing on displacement rather than distance, average velocity provides critical information about the direction of motion, which is essential in many applications of physics.

2. What is the phenomenon called when two waves meet and interact with each other?

- A. Refraction
- B. Diffraction
- C. Interference**
- D. Reflection

The phenomenon in which two waves meet and interact with each other is known as interference. This occurs when waves overlap, and their amplitudes combine, leading to different outcomes depending on the nature of the waves. Interference can be constructive, where the waves amplify each other, or destructive, where they reduce each other's effect. This concept is fundamental in understanding how waves behave in various contexts, such as sound, light, and water waves. It plays a crucial role in many applications, including noise-cancelling headphones, optical devices, and even in the study of quantum mechanics. Other possibilities, such as refraction, diffraction, and reflection, describe different wave behaviors. Refraction involves the bending of waves as they pass through different mediums, diffraction refers to the spreading of waves when they encounter obstacles or openings, and reflection occurs when waves bounce off a surface. Each of these phenomena interacts with waves in unique ways, but when discussing the direct interaction between waves, interference is the appropriate term.

3. What is a solution?

- A. A heterogeneous mixture of two or more substances
- B. A homogeneous mixture of two or more substances**
- C. An element mixed with a compound
- D. A pure substance

A solution is defined as a homogeneous mixture of two or more substances, meaning that the components are uniformly distributed at the molecular level. In a solution, such as saltwater or sugar dissolved in water, the solute (salt or sugar) is dissolved evenly throughout the solvent (water), resulting in a consistent composition throughout the mixture. This uniformity allows for properties such as concentration and the behavior of the solution to be consistent across any sample taken. In contrast to heterogeneous mixtures, where the individual components can often be distinguished and are not evenly distributed, a solution appears as a single phase. Pure substances, which only consist of one type of element or compound, and combinations of elements and compounds do not fit the definition of a solution as they lack the homogeneity that is characteristic of a true solution.

4. What is defined as "a concise statement about a fundamental relationship in nature"?

- A. Theory
- B. Hypothesis
- C. Law**
- D. Principle

A "law" in scientific terms refers to a concise statement that describes a fundamental relationship or phenomenon observed in nature. Scientific laws are derived from consistent experimental observations and are universally applicable, often expressed mathematically. They describe what happens under certain conditions without delving into why it happens. For instance, Newton's Law of Universal Gravitation succinctly expresses the relationship between the masses of two objects and the gravitational force between them. In contrast, a theory is a broader explanation that encompasses a range of hypotheses and is supported by a substantial body of evidence; it provides a framework for understanding phenomena but does not serve as a simple statement of relationship. A hypothesis is a specific, testable prediction that can be investigated through experimentation. Lastly, the term "principle" is often used similarly to "law," but can imply a more general understanding or foundational concept that guides scientific reasoning, yet is not strictly defined as a precise relationship.

5. Which of the following best defines a base in chemistry?

- A. A substance that increases the temperature of a solution**
- B. A substance that donates protons in a chemical reaction**
- C. A substance that accepts protons or donates hydroxide ions**
- D. A reactive compound that forms salts**

In chemistry, a base is best defined as a substance that accepts protons or donates hydroxide ions. This definition aligns with the Brønsted-Lowry theory, which describes bases as proton acceptors, and the Arrhenius definition, which characterizes bases as substances that increase the concentration of hydroxide ions (OH^-) in solution. When considering this definition in the context of acid-base reactions, bases typically react with acids to form water and a salt, which illustrates their role as proton acceptors. The ability to donate hydroxide ions also plays a crucial part in neutralizing acidic solutions, further solidifying the role of bases in various chemical processes. This concept is fundamental in understanding acid-base chemistry and is applicable in a wide range of scientific and practical situations. The other options do not accurately convey this essential aspect of what characterizes a base. For example, increasing the temperature of a solution does not define a base's chemical nature. Similarly, while some bases can be proton donors in specific reactions, this behavior does not encompass the broader definition of a base. Lastly, while bases can react to form salts, this is not a defining characteristic, as many other compounds can also form salts through various reactions.

6. When a net force on a moving object increases, the object will do what?

- A. Remain at rest**
- B. Exhibit a change in speed and/or direction**
- C. Stop immediately**
- D. Experience no change**

When a net force on a moving object increases, the object will exhibit a change in speed and/or direction due to Newton's second law of motion, which states that the force acting on an object is equal to the mass of that object multiplied by its acceleration ($F = ma$). If the net force acting on a moving object increases, this results in an increase in acceleration. The object's speed may increase, decrease, or even remain constant if the changes result in alterations to the direction of movement. For instance, if an object is moving and a greater force is applied in the same direction, the object's speed will increase. Conversely, if an applied force is directed opposite to its motion, this may cause the object to slow down. Additionally, if the net force changes direction, this also results in a change in direction of travel. This principle explains the relationship between force, mass, and motion in physics, making the correct choice clear.

7. What is the charge of a proton?

- A. Negative
- B. No charge
- C. Neutral
- D. Positive**

The charge of a proton is positive, which is why option D is the correct answer. In atomic structure, protons are positively charged particles found in the nucleus of an atom, and they play a crucial role in determining the element's identity and its chemical properties. The positive charge of a proton is equal in magnitude but opposite in sign to that of an electron, which is negatively charged. This balance of charges in an atom contributes to its overall electrical neutrality when the number of protons equals the number of electrons. Understanding this basic concept is fundamental in physical science, as it lays the groundwork for exploring atomic structure, chemical bonding, and the behavior of matter.

8. What is the purpose of a vector diagram in physics?

- A. To show scalar quantities only
- B. To represent forces and their direction**
- C. To demonstrate numerical values only
- D. To illustrate motion graphs

A vector diagram serves a specific purpose in physics by providing a visual representation of vectors, which are quantities that have both magnitude and direction. This is particularly important in analyzing forces, as it allows for an easy depiction of how various forces interact, their relative sizes, and their directions. By using arrows that represent the vectors, one can clearly see not just the numerical values associated with these forces but also how they combine or counteract each other. The other options do not accurately reflect the function of vector diagrams. While scalar quantities could be represented through different means, vector diagrams specifically illustrate quantities that have direction, thus making the representation of scalar quantities irrelevant in this context. Additionally, demonstrating numerical values alone misses the essential component of direction that is inherent in vector quantities. Lastly, while motion graphs are used in physics to depict the motion of an object, they do not serve the same function as vector diagrams in representing force interactions or other vector quantities.

9. Which science is primarily concerned with the composition, structure, properties, and reactions of matter?

- A. Physics**
- B. Biology**
- C. Chemistry**
- D. Geology**

Chemistry is the branch of science that focuses specifically on the composition, structure, properties, and reactions of matter. It studies the substances that make up the world around us and the changes they undergo during chemical reactions. This field encompasses various topics, including the interactions between different elements and compounds, the energy changes involved in reactions, and the characteristics of substances based on their molecular structure. Understanding chemistry is essential because it lays the groundwork for explaining processes not only in laboratory settings but also in everyday life, such as cooking, cleaning, and even biological functions. The properties of materials, how substances react with one another, and the formation of new compounds are all key aspects of chemistry. Other fields, while also scientific, have different focuses. Physics is primarily concerned with the laws of nature, energy, and mechanics, while biology focuses on living organisms and their interactions. Geology, on the other hand, studies the Earth, its materials, and the processes that shape it. Each of these fields offers valuable insights but does not encompass the full breadth of matter and its transformations in the way that chemistry does.

10. What is the freezing point of water on the Fahrenheit scale?

- A. 0 degrees**
- B. 32 degrees**
- C. 100 degrees**
- D. -32 degrees**

The freezing point of water on the Fahrenheit scale is 32 degrees. This temperature is a fundamental benchmark in the Fahrenheit temperature system, which was developed by Daniel Gabriel Fahrenheit in the early 18th century. At 32 degrees Fahrenheit, water transitions from its liquid state to ice under standard atmospheric conditions. This specific temperature is significant because it serves as a reference point for both weather reporting and various scientific calculations involving temperature. Understanding this point is crucial for different applications in everyday life, such as cooking and understanding weather patterns. In contrast, the other temperature points listed do not accurately reflect the freezing point of water in the Fahrenheit system. For instance, 0 degrees is the freezing point in the Celsius system, while 100 degrees is the boiling point of water in the Celsius scale, and -32 degrees does not represent any freezing or boiling points of water in common temperature scales. Thus, recognizing that 32 degrees is the established freezing point in Fahrenheit is essential for scientific and practical knowledge about water.

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://sdisc1101.examzify.com>

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

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