

SCIENCE ENTRANCE PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. Which of the following is an example of a renewable energy source?**
 - A. Natural gas
 - B. Nuclear energy
 - C. Solar energy
 - D. Coal

- 2. What type of bond involves the sharing of electron pairs between atoms?**
 - A. Ionic bond
 - B. Covalent bond
 - C. Metallic bond
 - D. Hydrogen bond

- 3. What is the scale used to measure the acidity or alkalinity of a solution?**
 - A. Kelvin scale
 - B. pH scale
 - C. Decibel scale
 - D. Magnitude scale

- 4. What describes the tendency of an object to resist a change in motion?**
 - A. Inertia
 - B. Momentum
 - C. Velocity
 - D. Acceleration

- 5. What does friction depend on?**
 - A. Surface Area
 - B. Relative Velocity
 - C. Material Properties
 - D. Normal Force

- 6. Which type of organic molecule is most organized for the purpose of biological processes?**
 - A. Fats
 - B. Amino acids
 - C. Proteins
 - D. Carbohydrates

- 7. What type of machines consist of only one or two parts?**
- A. Complex machines
 - B. Simple machines
 - C. Hybrid machines
 - D. Advanced machines
- 8. What is the cytoskeleton's primary role in a cell?**
- A. Support and structure
 - B. Energy production
 - C. Transport of nutrients
 - D. Storage of waste
- 9. What is Mendel often referred to as in the study of genetics?**
- A. The father of microbiology
 - B. The father of genetics
 - C. The father of evolution
 - D. The father of ecology
- 10. What is a pure substance that cannot be broken down by chemical means?**
- A. Compound
 - B. Element
 - C. Mixture
 - D. Ion

Answers

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

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Explanations

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1. Which of the following is an example of a renewable energy source?

- A. Natural gas
- B. Nuclear energy
- C. Solar energy**
- D. Coal

Solar energy is an example of a renewable energy source because it is derived from the sun's rays, which are inexhaustible on a human timescale. The sun produces a vast amount of energy that is available every day, and harnessing this energy through solar panels or other technologies does not deplete it. Unlike fossil fuels, which are finite and contribute to environmental degradation when burned, solar energy can be continuously replenished, making it a sustainable option for energy production. In contrast, natural gas, nuclear energy, and coal are not considered renewable. Natural gas and coal are fossil fuels that take millions of years to form and will eventually run out due to their extensive use. Nuclear energy, while low in carbon emissions, relies on uranium, which is a finite resource as well. Thus, solar energy stands out as a clean and sustainable choice among these options.

2. What type of bond involves the sharing of electron pairs between atoms?

- A. Ionic bond
- B. Covalent bond**
- C. Metallic bond
- D. Hydrogen bond

A covalent bond is formed when two atoms share electron pairs to achieve stability in their outer electron shells. This type of bond typically occurs between nonmetal atoms with similar electronegativities, allowing them to effectively share electrons rather than transfer them entirely from one atom to another. In covalent bonding, the shared electrons enable each atom to complete its valence shell, leading to a more stable configuration. For example, in a water molecule (H_2O), the oxygen atom shares electrons with the hydrogen atoms to form stable covalent bonds, resulting in a compound essential for life. The other types of bonds mentioned do not involve sharing electron pairs. Ionic bonds result from the transfer of electrons from one atom to another, leading to the attraction between oppositely charged ions. Metallic bonds involve a "sea of electrons" that are shared among many atoms, rather than between just two. Hydrogen bonds are a form of weak attraction that occurs between molecules, rather than a true bond formed by sharing electrons.

3. What is the scale used to measure the acidity or alkalinity of a solution?

- A. Kelvin scale
- B. pH scale**
- C. Decibel scale
- D. Magnitude scale

The pH scale is specifically designed to measure the acidity or alkalinity of a solution, making it the correct answer. This scale ranges from 0 to 14, where values below 7 indicate acidity, a pH of 7 signifies neutrality, and values above 7 denote alkalinity. The scale quantitatively expresses the concentration of hydrogen ions (H^+) in a solution; therefore, a lower pH corresponds to a higher concentration of hydrogen ions and, thus, increased acidity. Conversely, a higher pH reflects a lower hydrogen ion concentration and increased alkalinity. Other scales mentioned, such as the Kelvin scale, are unrelated to acidity and refer instead to temperature measurement. The decibel scale measures sound intensity, and the magnitude scale relates to measuring the energy released by earthquakes. Each of these scales serves a distinct purpose in their respective fields, which further emphasizes the unique role of the pH scale in chemistry and biology.

4. What describes the tendency of an object to resist a change in motion?

- A. Inertia
- B. Momentum
- C. Velocity
- D. Acceleration

The tendency of an object to resist a change in its state of motion is known as inertia. This concept is a fundamental principle in physics, particularly in the study of motion. Inertia is directly related to mass; an object with greater mass has more inertia and thus requires a larger force to change its motion compared to an object with less mass. This means that whether an object is at rest or moving at a constant speed, it will remain in that state unless acted upon by an external force. For example, a heavy train moving at a consistent speed will not suddenly stop or change direction without an applied force, demonstrating its inertia. In summary, inertia is crucial in understanding how and why objects behave the way they do when forces are applied, making it a key concept in classical mechanics.

5. What does friction depend on?

- A. Surface Area
- B. Relative Velocity
- C. Material Properties
- D. Normal Force

Friction is primarily dependent on the normal force, which is the force exerted perpendicular to the surfaces in contact. The magnitude of the frictional force is influenced by this normal force because the greater the force pressing the two surfaces together, the more microscopic interactions occur between the surfaces, leading to increased friction. In many cases, friction can be represented by the equation $F_f = \mu F_n$, where F_f is the frictional force, μ is the coefficient of friction (which depends on the materials in contact), and F_n is the normal force. This relationship indicates that as the normal force increases, assuming the coefficient of friction remains constant, the frictional force will also increase. While surface area, relative velocity, and material properties can influence friction, they do not impact it in as direct and significant a manner as the normal force does. The interaction at the surface level triggered by the normal force is what primarily determines the amount of friction generated between two surfaces.

6. Which type of organic molecule is most organized for the purpose of biological processes?

- A. Fats
- B. Amino acids
- C. Proteins**
- D. Carbohydrates

Proteins are the most organized type of organic molecule for the purpose of biological processes due to their complex structure and specific functional capabilities. Proteins are composed of one or more chains of amino acids that fold into intricate three-dimensional shapes. This folding is precisely dictated by the sequence of amino acids and is essential for the protein's function. The specific arrangement of amino acids leads to various interactions, such as hydrogen bonding, hydrophobic interactions, and disulfide bridges, which help stabilize the protein's structure. This organization allows proteins to perform a wide array of functions, including catalyzing biochemical reactions (as enzymes), serving as structural components of cells, transporting molecules, and playing critical roles in cell signaling and immune responses. In contrast, while fats, amino acids, and carbohydrates play important roles in biological processes, they do not exhibit the same level of organization or functional complexity as proteins. Fats primarily serve as energy storage and structural components of membranes. Amino acids are the building blocks of proteins but do not perform biological functions on their own in the same way. Carbohydrates mainly function as energy sources and structural materials, but again lack the diverse functionalities that well-organized proteins can provide. Thus, proteins stand out as the most organized and function

7. What type of machines consist of only one or two parts?

- A. Complex machines
- B. Simple machines**
- C. Hybrid machines
- D. Advanced machines

The correct answer is found in the classification of machines based on their complexity and functionality. Simple machines are basic mechanical devices that typically consist of one or two parts designed to alter the direction or magnitude of a force. Common examples of simple machines include levers, pulleys, inclined planes, wheels and axles, screws, and wedges. They serve to make work easier by allowing forces to be applied in a more convenient manner. The focus on simplicity highlights their fundamental role in mechanics, where they perform work with minimal components, making them foundational to mechanical engineering and physics. In contrast, terms like complex machines and advanced machines refer to systems that incorporate multiple components and sophisticated mechanisms, while hybrid machines may combine elements of different types of machines, including both simple and more intricate designs. Understanding this hierarchy helps clarify why simple machines are characterized by their fundamental simplicity and ability to perform tasks efficiently using limited parts.

8. What is the cytoskeleton's primary role in a cell?

A. Support and structure

B. Energy production

C. Transport of nutrients

D. Storage of waste

The primary role of the cytoskeleton in a cell is to provide support and structure. The cytoskeleton is a complex network of protein filaments and tubules that extends throughout the cytoplasm, playing a crucial role in maintaining the cell's shape. It acts like a scaffolding, giving structural integrity to the cell, enabling it to withstand mechanical stresses and maintain its form. Additionally, the cytoskeleton is involved in various dynamic processes such as cell movement, division, and intracellular transport. By anchoring organelles in place and enabling their transport, it facilitates a well-organized cellular environment. The cytoskeleton also contributes to cell signaling by helping in the transmission of signals throughout the cell. In contrast, the other options listed pertain to different cellular functions that are not directly associated with the cytoskeleton's main role, such as energy production, transport of nutrients, and storage of waste. These functions are essential for the overall health and operation of a cell but are carried out by different cellular components, like mitochondria for energy production, vesicles for transport, and lysosomes for waste storage.

9. What is Mendel often referred to as in the study of genetics?

A. The father of microbiology

B. The father of genetics

C. The father of evolution

D. The father of ecology

Mendel is often referred to as the father of genetics because of his groundbreaking work in the field of heredity. Through his experiments with pea plants, he discovered the fundamental laws of inheritance, which included concepts like dominant and recessive traits. His meticulous approach to scientific inquiry allowed him to determine how traits were passed from one generation to the next, laying the foundation for what would eventually become the field of modern genetics. Mendel's principles of segregation and independent assortment are critical to understanding how genetic variation occurs, making his contributions pivotal to both biology and agriculture. His work established the groundwork for the later development of genetic theory and provided essential insights into the mechanisms behind heredity.

10. What is a pure substance that cannot be broken down by chemical means?

A. Compound

B. Element

C. Mixture

D. Ion

A pure substance that cannot be broken down by chemical means is defined as an element. Elements are fundamental substances that consist of one type of atom and are represented on the periodic table. They cannot be decomposed into simpler substances by chemical reactions, which distinguishes them from compounds, which are made up of two or more different elements bonded together and can be broken down into those constituent elements through chemical processes. Mixtures, on the other hand, contain two or more substances physically combined and can be separated by physical means; they do not represent pure substances. Ions, while charged particles that can be part of compounds or elements, are not pure substances themselves but rather representations of atoms or molecules that have gained or lost electrons. Thus, only elements fit the criterion of being pure substances that cannot be chemically broken down.

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://scienceentrance.examzify.com>

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

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