

# Science Entrance Practice Exam (Sample)

## Study Guide



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

**This is a sample study guide. To access the full version with hundreds of questions,**

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**SAMPLE**

# Table of Contents

<b>Copyright</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>How to Use This Guide</b> .....	<b>4</b>
<b>Questions</b> .....	<b>6</b>
<b>Answers</b> .....	<b>9</b>
<b>Explanations</b> .....	<b>11</b>
<b>Next Steps</b> .....	<b>17</b>

# 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. Don't worry about getting everything right, 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, and take breaks to retain information better.**

## **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.**

## **7. Use Other Tools**

**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!**

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## Questions

- 1. Meiosis contributes to genetic diversity through which of the following processes?**
  - A. Crossing over and independent assortment**
  - B. Asexual reproduction**
  - C. Cellular respiration**
  - D. Cell signaling**
- 2. What is known as the strongest known force, holding together protons and neutrons in an atom's nucleus?**
  - A. Electromagnetic Force**
  - B. Gravitational Force**
  - C. Nuclear Force**
  - D. Frictional Force**
- 3. Which of the following is an example of a renewable energy source?**
  - A. Natural gas**
  - B. Nuclear energy**
  - C. Solar energy**
  - D. Coal**
- 4. What type of simple machine is a flat, sloped surface?**
  - A. Wedge**
  - B. Inclined plane**
  - C. Lever**
  - D. Pulley**
- 5. What are machines made up of two or more simple machines called?**
  - A. Compounded machines**
  - B. Compound machines**
  - C. Composite machines**
  - D. Complex machines**



- 6. What is the primary cellular function of mitosis in an organism?**
- A. To produce gametes for reproduction**
  - B. To increase genetic variation**
  - C. To enable growth and tissue repair**
  - D. To perform photosynthesis**
- 7. What do animal cells contain that plant cells do not?**
- A. Cell wall**
  - B. Chloroplasts**
  - C. Centrioles**
  - D. Vacuoles**
- 8. What is the basic unit of life?**
- A. Cells**
  - B. Atoms**
  - C. Tissues**
  - D. Organs**
- 9. What is a key characteristic of the Golgi apparatus?**
- A. Production of ATP**
  - B. Distribution and modification of proteins**
  - C. Storage of genetic information**
  - D. Cell respiration**
- 10. What type of organisms does Kingdom Plantae consist of?**
- A. Unicellular organisms**
  - B. Multicellular organisms**
  - C. Heterotrophic organisms**
  - D. Prokaryotic organisms**

## **Answers**

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

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## **Explanations**

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**1. Meiosis contributes to genetic diversity through which of the following processes?**

**A. Crossing over and independent assortment**

**B. Asexual reproduction**

**C. Cellular respiration**

**D. Cell signaling**

Meiosis plays a crucial role in promoting genetic diversity, primarily through the processes of crossing over and independent assortment. During meiosis, particularly in prophase I, homologous chromosomes exchange segments of DNA in a process called crossing over. This exchange results in new combinations of alleles (gene variants) on each chromosome. When the gametes are formed, they carry these unique combinations, contributing to the genetic variation among offspring. Additionally, during metaphase I, the arrangement of homologous chromosome pairs at the equatorial plane of the cell is random, which leads to independent assortment. This means that the distribution of maternal and paternal chromosomes to the gametes occurs without regard to the other chromosome pairs. Consequently, the combination of chromosomes that end up in each gamete is unique, further increasing variability. Collectively, these mechanisms ensure that offspring have a genetic makeup that can differ significantly from their parents and from each other, which is essential for evolution and adaptation in changing environments.

**2. What is known as the strongest known force, holding together protons and neutrons in an atom's nucleus?**

**A. Electromagnetic Force**

**B. Gravitational Force**

**C. Nuclear Force**

**D. Frictional Force**

The strongest known force that holds protons and neutrons together in an atom's nucleus is the nuclear force, also referred to as the strong nuclear force. This fundamental interaction is responsible for overcoming the electromagnetic repulsion between the positively charged protons, allowing them to remain close together within the nucleus. The nuclear force operates over very short distances, typically on the order of 1 femtometer ( $10^{-15}$  meters), and is much stronger than the electromagnetic force at these scales. The nuclear force is mediated by particles called gluons, which bind quarks (the building blocks of protons and neutrons) together within these particles. This force is crucial for the stability of atomic nuclei, enabling elements to exist without spontaneously disintegrating. Without the nuclear force, atomic nuclei would not be able to maintain their integrity, resulting in a universe that could not form as we know it. In contrast, the electromagnetic force governs interactions between charged particles but is weaker than the nuclear force at the scale of the atomic nucleus. The gravitational force, while it governs the motion of celestial bodies and has a significant influence at larger scales, is also weaker than the nuclear force when considering interactions at the level of particles. Frictional force, related to motion and contact

**3. 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.

**4. What type of simple machine is a flat, sloped surface?**

- A. Wedge**
- B. Inclined plane**
- C. Lever**
- D. Pulley**

A flat, sloped surface is classified as an inclined plane because it is a surface that is tilted at an angle to the horizontal. The primary function of an inclined plane is to allow heavy objects to be raised vertically by using less force than lifting them straight up. For example, when you push a wheelbarrow up a ramp, you are using an inclined plane to reduce the effort needed to lift the load compared to lifting it directly upwards. Inclined planes help to distribute the weight of an object over a longer distance, which makes the task of lifting easier. This principle makes inclined planes incredibly useful in various applications, including ramps, slides, and roads up hills. The other options include a wedge, which consists of two inclined planes joined back to back and is typically used to split objects apart; a lever, which is a rigid bar that rotates around a pivot point; and a pulley, which is a wheel on an axle designed to support the movement of a cable or rope. While these are all essential simple machines, they do not share the characteristics of a flat, sloped surface like an inclined plane does.

**5. What are machines made up of two or more simple machines called?**

- A. Compounded machines**
- B. Compound machines**
- C. Composite machines**
- D. Complex machines**

Machines that consist of two or more simple machines are referred to as compound machines. This terminology is widely accepted in physics and engineering to describe devices that utilize the mechanical advantages of multiple simple machines working together. Simple machines, such as levers, pulleys, wedges, screws, inclined planes, and wheels and axles, serve the fundamental purpose of making tasks easier by allowing force to be applied more effectively. When these simple machines are combined, they create compound machines that can perform more complex tasks, such as a bicycle (which combines wheels, pedals, and gears) or a car's engine (which combines various mechanical systems). Understanding compound machines is essential in mechanics because it allows for the analysis of how different mechanical systems interact and amplify force or change direction, making it crucial for designing and understanding various tools and systems used in technology and engineering.

**6. What is the primary cellular function of mitosis in an organism?**

- A. To produce gametes for reproduction**
- B. To increase genetic variation**
- C. To enable growth and tissue repair**
- D. To perform photosynthesis**

The primary cellular function of mitosis is centered around enabling growth and tissue repair. Mitosis is the process through which a single cell divides to produce two identical daughter cells, each with the same number of chromosomes and genetic information as the original cell. This process is crucial during the growth of an organism, as it allows for the increase in the number of cells, leading to overall growth and the development of tissues and organs. In addition to growth, mitosis plays a vital role in tissue repair. When tissues are damaged—whether due to injury, disease, or normal wear and tear—mitosis allows for the replacement of dead or damaged cells. This ability to regenerate and maintain healthy tissues is essential for the overall functioning and longevity of an organism. The other options pertain to different processes. The production of gametes for reproduction is a function of meiosis, which reduces the chromosome number by half and facilitates genetic diversity through recombination. Increasing genetic variation is primarily attributed to processes like sexual reproduction and mutations, rather than mitosis, which produces genetically identical cells. Performing photosynthesis is a function specific to certain organisms, like plants and some algae, and is not related to the cellular division processes that mitosis entails. Therefore, the key purpose

## 7. What do animal cells contain that plant cells do not?

- A. Cell wall
- B. Chloroplasts
- C. Centrioles**
- D. Vacuoles

Animal cells contain centrioles, which are structures involved in cell division and the formation of the spindle fibers that separate chromosomes during mitosis. Centrioles play a crucial role in organizing the mitotic spindle and ensuring that chromosomes are correctly distributed into the daughter cells. In contrast, plant cells generally do not have centrioles. Instead, they use other structures to organize the cell cycle and manage chromosome separation. While both animal and plant cells have many similarities, the presence of centrioles is a distinguishing feature of animal cells, highlighting the differences in their cell division mechanisms. The options regarding cell walls, chloroplasts, and vacuoles refer to features predominantly found in plant cells, which is why they don't contribute to identifying what is unique to animal cells.

## 8. What is the basic unit of life?

- A. Cells**
- B. Atoms
- C. Tissues
- D. Organs

The basic unit of life is cells. Cells are the fundamental building blocks of all living organisms, from the simplest unicellular bacteria to complex multicellular organisms like humans. Each cell functions as an independent unit, carrying out essential life processes such as metabolism, growth, and reproduction. Cells come in various types tailored to their specific roles. For example, muscle cells are specialized for movement, while nerve cells are adapted for transmitting signals. As the smallest structural and functional units, they play a crucial role in the organization of living systems. When cells group together, they form tissues, which in turn can combine to create organs. This hierarchical structure shows that while other options represent higher levels of biological organization, they are made up of cells. Understanding that cells are the foundation of life is vital in cell biology and broader biological sciences.



## 9. What is a key characteristic of the Golgi apparatus?

- A. Production of ATP
- B. Distribution and modification of proteins**
- C. Storage of genetic information
- D. Cell respiration

The Golgi apparatus is primarily responsible for the modification, sorting, and packaging of proteins and lipids that are synthesized in the endoplasmic reticulum. Once proteins are produced in the rough endoplasmic reticulum, they are transported to the Golgi apparatus, where they undergo critical processes that include glycosylation and the addition of other molecular groups, which can affect their function. After modification, the Golgi apparatus sorts these proteins and directs them to their appropriate destinations, either within the cell or for secretion outside the cell. This role as a central hub for processing and distributing proteins underscores its importance in cellular function. The Golgi apparatus acts like a post office, modifying the "packages" (proteins) and making sure they are sent to the right locations, which is why its characteristic feature is centered around distribution and modification rather than functions like producing ATP, storing genetic information, or facilitating cell respiration.

## 10. What type of organisms does Kingdom Plantae consist of?

- A. Unicellular organisms
- B. Multicellular organisms**
- C. Heterotrophic organisms
- D. Prokaryotic organisms

Kingdom Plantae is primarily composed of multicellular organisms, which include a wide variety of plants ranging from simple mosses to complex flowering plants. These organisms are characterized by their ability to perform photosynthesis, harnessing sunlight to convert carbon dioxide and water into glucose and oxygen, a process facilitated by chlorophyll found in their cells. This multicellularity is significant as it allows for specialization of cells and tissues, leading to the development of complex structures such as roots, stems, leaves, and reproductive organs, which are essential for their growth and survival in various environments. While unicellular organisms, heterotrophic organisms, and prokaryotic organisms represent distinct categories of life, they do not constitute the defining trait of Kingdom Plantae. Unicellular organisms lack the complex structure found in plants, heterotrophic organisms do not perform photosynthesis and rely on consuming other organisms for nourishment, and prokaryotic organisms, such as bacteria, do not possess the sophisticated cell organization that is characteristic of the multicellular eukaryotic cells seen in plants. Thus, the defining characteristic of Kingdom Plantae being multicellular organisms underlines its distinction within the broader classification of life forms.

## 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://scienceentrance.examzify.com>**

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