

HOAE GENERAL SCIENCE PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 an inorganic molecular state of matter?**
 - A. Salt
 - B. Sugar
 - C. Plastic
 - D. Quartz
- 2. What is the best source for dating the origin of the solar system?**
 - A. Meteorites
 - B. Moon rocks
 - C. Distant galaxies
 - D. Comets
- 3. Bernoulli's principle describes what happens to fluid pressure as speed increases?**
 - A. Increases
 - B. Stays the same
 - C. Becomes zero
 - D. Decreases
- 4. What are the basic building blocks of proteins?**
 - A. Nucleotides
 - B. Fatty acids
 - C. Saccharides
 - D. Amino acids
- 5. Which element is formed last in the stages of nuclear fusion inside stars?**
 - A. Hydrogen
 - B. Carbon
 - C. Helium
 - D. Oxygen

- 6. What is the formula used to calculate speed?**
- A. Distance = speed $\times$ time
 - B. Speed = distance / time
 - C. Time = distance / speed
 - D. Velocity = distance / time
- 7. What type of bond involves sharing electrons equally between atoms?**
- A. Ionic bond
 - B. Polar covalent bond
 - C. Hydrogen bond
 - D. Nonpolar covalent bond
- 8. Which of the following best describes a DNA triplet?**
- A. It is a group of three bases in DNA that codes for an amino acid
 - B. It is a pair of bases
 - C. It codes for nucleotides
 - D. It occurs only in bacteria
- 9. How many milliliters are there in a 1-liter soda bottle?**
- A. 100
 - B. 1,000
 - C. 10,000
 - D. 1
- 10. Which of the following is NOT a primary function of ribosomes?**
- A. Protein synthesis
 - B. Peptide bond formation
 - C. Assembly of proteins
 - D. DNA replication

Answers

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

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Explanations

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1. Which of the following is an example of an inorganic molecular state of matter?

- A. Salt
- B. Sugar
- C. Plastic
- D. Quartz**

The key idea is identifying substances that are not carbon-based. Organic compounds contain carbon-hydrogen bonds, which puts them in the organic category. Sugar and plastic are examples of organic materials because their structures are built from carbon-based molecules. Salt is inorganic, but it forms a lattice of ions rather than discrete molecules, so it's not a molecular substance in the sense of separate, covalently bonded units. Quartz is silicon dioxide, a mineral where silicon and oxygen share a continuous network rather than individual molecules. This makes quartz a classic inorganic material, matching the idea of an inorganic molecular state of matter.

2. What is the best source for dating the origin of the solar system?

- A. Meteorites**
- B. Moon rocks
- C. Distant galaxies
- D. Comets

Dating the origin of the solar system relies on materials that formed at the very beginning and have stayed essentially unchanged since then. Meteorites provide the best source because they are primitive pieces from the early solar nebula that haven't undergone extensive melting or differentiation. By applying radiometric dating to these meteorites, especially their calcium-aluminum-rich inclusions, scientists can measure ages around 4.56 billion years, which marks the time of the solar system's formation. Moon rocks tell us about the Moon's history, and distant galaxies aren't directly tied to our solar system's birth, while comets can be old but are harder to date precisely and don't yield as robust a single age for the solar system as meteorites do.

3. Bernoulli's principle describes what happens to fluid pressure as speed increases?

- A. Increases
- B. Stays the same
- C. Becomes zero
- D. Decreases**

The main idea is that in a smooth, steady fluid flow, faster speed means lower pressure. This comes from Bernoulli's principle, which says the total energy per unit volume along a streamline stays nearly constant: pressure energy plus kinetic energy (related to velocity) add up with any height energy. When a region of the flow speeds up, its kinetic energy term $\frac{1}{2}\rho v^2$ increases, so the static pressure must drop to keep the total energy balanced. That's why pressure decreases as speed increases. This explains everyday examples like air moving faster over the top surface of a wing, where the rapid flow lowers pressure and helps produce lift. So the correct idea is that pressure decreases with increasing speed.

4. What are the basic building blocks of proteins?

- A. Nucleotides
- B. Fatty acids
- C. Saccharides
- D. Amino acids**

Proteins are polymers built from amino acids, the basic units that define their structure and function. Each amino acid has an amino group, a carboxyl group, and a distinctive side chain; these units link together by peptide bonds through dehydration synthesis to form long chains. The sequence and chemical properties of the amino acids determine how the chain folds into a three-dimensional shape, which in turn enables the protein to carry out specific jobs such as speeding up reactions, signaling, or providing structural support. The other options correspond to building blocks of other biomolecules: nucleotides for nucleic acids, fatty acids for lipids, and saccharides for carbohydrates.

5. Which element is formed last in the stages of nuclear fusion inside stars?

- A. Hydrogen
- B. Carbon
- C. Helium
- D. Oxygen**

In stars, fusion builds heavier elements through successive burning stages: hydrogen fuses into helium, then helium burning creates carbon and oxygen. In the helium-burning phase, carbon is formed first via the triple-alpha process, and some carbon can capture another helium nucleus to become oxygen. So, among these elements, oxygen appears later in this stage than carbon. While stars can proceed to even heavier elements in later burning stages (neon, magnesium, silicon, iron), those options aren't listed here, so oxygen is the last formed within the shown set.

6. What is the formula used to calculate speed?

- A. Distance = speed $\times$ time
- B. Speed = distance / time**
- C. Time = distance / speed
- D. Velocity = distance / time

Speed is how fast something moves, measured as distance covered per unit of time. The formula used to calculate speed is distance divided by time. For example, traveling 200 meters in 10 seconds gives a speed of 20 meters per second. The other equations relate to other quantities: distance equals speed times time, which you use to find distance when you know speed and time; time equals distance divided by speed, which solves for time; and velocity equals distance divided by time, which is the same rate as speed but with a direction. Since the question asks for the formula for speed, the division of distance by time is the defining relationship.

7. What type of bond involves sharing electrons equally between atoms?

- A. Ionic bond
- B. Polar covalent bond
- C. Hydrogen bond
- D. Nonpolar covalent bond**

Sharing electrons equally happens when the two atoms have very similar electronegativities, so neither atom pulls the electrons more strongly. That results in a nonpolar covalent bond, where the electron cloud is shared evenly and there are no significant partial charges on either atom. This is what you see in simple diatomic molecules like H₂ or O₂. If electrons were shared unequally, you'd have a polar covalent bond with partial charges. If electrons were transferred from one atom to another, it would be an ionic bond. Hydrogen bonds aren't even bonds formed by sharing electrons; they're weaker attractions between molecules involving a hydrogen atom and a highly electronegative partner. So the bond that involves sharing electrons equally is a nonpolar covalent bond.

8. Which of the following best describes a DNA triplet?

- A. It is a group of three bases in DNA that codes for an amino acid**
- B. It is a pair of bases
- C. It codes for nucleotides
- D. It occurs only in bacteria

Genetic information is read in three-nucleotide units. A DNA triplet is three adjacent bases on the DNA strand that, through transcription into RNA and then translation, specifies a particular amino acid. Because the genetic code uses triplets, each triplet corresponds to one amino acid (or a stop signal), so this three-base group effectively codes for an amino acid in the forming protein. The other ideas don't fit: a pair of bases is only two nucleotides, triplets don't code for nucleotides themselves, and this triplet-coding pattern is not restricted to bacteria but is a universal feature of nearly all organisms.

9. How many milliliters are there in a 1-liter soda bottle?

- A. 100
- B. 1,000**
- C. 10,000
- D. 1

Understanding this comes down to how the metric units relate. The prefix milli- means one thousandth, and there are 1000 milliliters in every liter. So a 1-liter bottle holds 1000 milliliters. The other numbers would correspond to volumes either smaller than a liter or larger than a liter, which isn't the case here.

10. Which of the following is NOT a primary function of ribosomes?

- A. Protein synthesis
- B. Peptide bond formation
- C. Assembly of proteins
- D. DNA replication**

Ribosomes are the cellular machines that translate genetic information into proteins. They link amino acids together in the order specified by messenger RNA, forming peptide bonds in the ribosome's active site to build a polypeptide chain. That assembly of amino acids into proteins is the core activity of ribosomes during protein synthesis. DNA replication, on the other hand, is carried out by DNA polymerases and related enzymes that copy the cell's DNA before division. So the activity that does not fit as a ribosome function is DNA replication.

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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://hoaegenscience.examzify.com>

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

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