NOVA Hunting the Elements Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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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

1. Which set lists the six most common elements of life?

A. carbon, hydrogen, nitrogen, oxygen, calcium, sulfur

B. carbon, hydrogen, nitrogen, oxygen, phosphorus, sulfur

C. carbon, helium, lithium, oxygen, phosphorus, sulfur

D. carbon, hydrogen, nitrogen, neon, phosphorus, sulfur

2. What three conditions did the earliest bacteria need for energy production?

A. Hot water, hydrogen, nitrogen, sulfur, iron

B. Sunlight, oxygen, water

C. Heat, carbon dioxide, methane

D. Pressure, salts, silica

3. What is created in a supernova explosion?

A. Elements heavier than iron

B. Only hydrogen gas

C. Only helium gas

D. Light elements only

4. What is the number of protons and electrons in gold?

A. 78

B. 79

C. 80

D. 81

5. What best describes gold's density?

A. It is light

B. It is dense

C. It is extremely light

D. It has low density

6. What common object contains phosphorus, and what is an associated property?

A. Matches; ATP

B. Water; ATP

C. Charcoal; ATP

D. Salt; ATP

7. Describe a body function or part that utilizes potassium?

A. Cramping

B. Heart rhythm

C. Nerve signaling

D. Blood pressure

8. Which is an example of a real life object made from bromine?

A. Soda

B. Salt

C. Water

D. Glass

9. What element was used as fuel for the "Little Boy" bomb?

A. Uranium-235

B. Plutonium-239

C. Uranium-238

D. Thorium-232

10. What is the origin of hydrogen, the smallest element?

A. The Big Bang

B. The Earth's core

C. The Sun's fusion

D. A primordial gas cloud

Answers

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

Explanations

1. Which set lists the six most common elements of life?

A. carbon, hydrogen, nitrogen, oxygen, calcium, sulfur

B. carbon, hydrogen, nitrogen, oxygen, phosphorus, sulfur

C. carbon, helium, lithium, oxygen, phosphorus, sulfur

D. carbon, hydrogen, nitrogen, neon, phosphorus, sulfur

Life relies on a small set of elements that form the vast majority of biological molecules. The six most common are carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur—often remembered as CHNOPS. Carbon provides the backbone for organic molecules, allowing long chains and rings to build carbohydrates, proteins, fats, and nucleic acids. Hydrogen and oxygen are major parts of water and a huge variety of organic compounds, enabling the diverse bonding that shapes complex structures. Nitrogen is essential for amino acids and nucleotides, the building blocks of proteins and DNA/RNA. Phosphorus is crucial for nucleic acids and energy transfer molecules like ATP. Sulfur appears in certain amino acids and vitamins, contributing to the structure and function of some proteins. Other elements on the choices, such as calcium or noble gases like helium and neon, aren't found in as large amounts in living matter or don't participate in the core organic chemistry of life, so they don't belong to the six most common. That's why the set including carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur best represents life's fundamental elements.

2. What three conditions did the earliest bacteria need for energy production?

A. Hot water, hydrogen, nitrogen, sulfur, iron

B. Sunlight, oxygen, water

C. Heat, carbon dioxide, methane

D. Pressure, salts, silica

Early bacteria likely produced energy by chemolithotrophy in hot, mineral-rich water from Earth's interior, not by capturing sunlight. In hydrothermal-vent–style environments, heat provides the setting and drives active chemistry, while inorganic molecules supply the energy. Hydrogen gas can be oxidized to release usable energy, and minerals such as sulfur compounds and iron participate in redox reactions that couple energy release to cellular needs. Nitrogen-containing compounds are important as nutrients for making proteins and nucleic acids, but they aren't the primary energy sources in this scenario. So the combination of a hot aqueous environment with a chemical energy source (like hydrogen) and mineral substrates for redox chemistry best explains how the earliest bacteria could produce energy. Other options rely on sunlight, oxygen, or non-energy-providing conditions that wouldn't apply to the early, anaerobic, thermophilic world.

3. What is created in a supernova explosion?

A. Elements heavier than iron

B. Only hydrogen gas

C. Only helium gas

D. Light elements only

In a supernova, nuclei are built under extreme heat, pressure, and a flood of neutrons, allowing nucleosynthesis to push beyond what happens in normal stellar burning. The rapid neutron-capture process creates new nuclei heavier than iron, and those newly formed heavy elements are ejected into space by the explosion. This is how fresh heavy elements—like nickel, copper, silver, gold, and many others—are forged and dispersed into the interstellar medium for future stars and planets to incorporate. Lighter elements such as hydrogen and helium are already present from earlier stages of the star's life or from earlier epochs of the universe, so the defining production during a supernova is the creation of heavy elements beyond iron, not just the buildup of light gases.

4. What is the number of protons and electrons in gold?

A. 78

B. 79

C. 80

D. 81

Gold's atomic number is 79, which is the number of protons in its nucleus. In a neutral atom, the number of electrons equals the number of protons, so there are also 79 electrons. So the counts are 79 protons and 79 electrons. The other numbers would correspond to other elements, not gold, unless the atom is ionized.

5. What best describes gold's density?

A. It is light

B. It is dense

C. It is extremely light

D. It has low density

Density measures how much matter is packed into a given volume. Gold has a high density because its atoms are heavy and packed tightly, so a small piece weighs a lot for its size. In numbers, gold runs around 19.3 g/cm³, which is far denser than common materials like water (about 1 g/cm³). That's why gold is described as dense: it feels heavy for its size. The other options describe materials that are light or have low density, which doesn't match gold's characteristic.

6. What common object contains phosphorus, and what is an associated property?

A. Matches; ATP

B. Water; ATP

C. Charcoal; ATP

D. Salt; ATP

Phosphorus shows up in a common object: matches. A key related idea is ATP, the energy-carrying molecule in cells, which contains phosphate groups and stores/releases energy when their bonds are broken. So matches illustrate phosphorus in everyday items, and ATP highlights how phosphorus is critical for energy transfer in biology. The other options don't fit because water, charcoal, and salt aren't typical sources of phosphorus, and ATP is the biological molecule linked to phosphorus—not a feature of those other objects.

7. Describe a body function or part that utilizes potassium?

A. Cramping

B. Heart rhythm

C. Nerve signaling

D. Blood pressure

Potassium is essential for electrical activity in excitable cells, especially the heart. In cardiac cells, potassium ions help reset the cell's electrical state after each beat, supporting the orderly repolarization that allows the heart to beat regularly. That makes heart rhythm a direct function that relies on potassium. Cramping is a symptom that can arise from potassium imbalance affecting muscle contraction, not a body function or part that uses potassium itself. Nerve signaling does rely on potassium to reset neurons after firing, but the heart's rhythm is the clearest, most specific body function described by the prompt as utilizing potassium. Blood pressure is influenced by potassium balance, but it's an outcome rather than a function or part that directly uses potassium.

8. Which is an example of a real life object made from bromine?

A. Soda

B. Salt

C. Water

D. Glass

Bromine can show up in everyday products through brominated compounds. A common real-life example is brominated vegetable oil used as an emulsifier in some citrus-flavored sodas to keep the oils and flavors dispersed. That means a soda can contain bromine, making it a valid everyday object associated with bromine. In contrast, salt, water, and glass are not typically made with bromine in ordinary contexts—salt is sodium chloride, water is H_2O, and glass is mainly silica with other additives, not bromine-containing compounds. (Note: some sodas historically used BVO, but many brands have replaced it with different emulsifiers due to safety concerns.)

9. What element was used as fuel for the "Little Boy" bomb?

A. Uranium-235

B. Plutonium-239

C. Uranium-238

D. Thorium-232

Fission fuel must be fissile, meaning it can sustain a rapid chain reaction when struck by neutrons. Little Boy used highly enriched uranium-235 because it fissions readily with neutrons and can be assembled into a supercritical mass with a simple gun-type design: one piece of uranium-235 is fired into another, creating a single, large mass that undergoes a fast, runaway reaction. Plutonium-239 is also fissile and was used in the Fat Man device with a more complex implosion design, partly to manage issues like spontaneous fission. Uranium-238 isn't easily fissioned by slow neutrons and isn't suitable as a standalone weapon fuel, while thorium-232 is fertile and would need conversion to a fissile form in a reactor. So the fuel for Little Boy is uranium-235.

10. What is the origin of hydrogen, the smallest element?

A. The Big Bang

B. The Earth's core

C. The Sun's fusion

D. A primordial gas cloud

Hydrogen formed in the very early universe during Big Bang nucleosynthesis. In the first minutes after the Big Bang, the extreme heat and density allowed protons and neutrons to fuse into light nuclei, with the simplest nucleus—a single proton that becomes hydrogen—produced in vast amounts. As the universe cooled, electrons joined these nuclei to form neutral hydrogen atoms, making hydrogen the most abundant element today. The Sun's fusion later uses hydrogen as fuel and converts it into helium, rather than creating hydrogen. The Earth's core formed from heavier planetary materials long after the Sun and planets formed. A primordial gas cloud describes the material present, not its origin. So the Big Bang is where hydrogen comes from.

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://novahuntingtheelements.examzify.com

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