

California Science Test (CAST) Practice Exam (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

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- 1. A community of organisms where there are several interrelated food chains.**
 - A. Food chain**
 - B. Carnivore**
 - C. Food web**
 - D. Herbivore**

- 2. What is formed when two atoms share electrons?**
 - A. Ionic Bond**
 - B. Crystal**
 - C. Covalent Bond**
 - D. Molecular Compound**

- 3. Which compound contains only carbon and hydrogen?**
 - A. Organic Compound**
 - B. Hydrocarbon**
 - C. Structural Formula**
 - D. Isomer**

- 4. Which term refers to the building blocks that make up DNA and RNA?**
 - A. Amino acid**
 - B. Ribonucleotide**
 - C. Nucleic Acid**
 - D. Nucleotide**

- 5. A charged particle formed from more than one atom is called what?**
 - A. Ion**
 - B. Valence electrons**
 - C. Electron dot diagram**
 - D. Polyatomic ions**

- 6. Which term is represented by a branching diagram showing evolutionary relationships?**
- A. Shared derived characteristics**
 - B. Branching tree diagram**
 - C. Solution**
 - D. Binomial nomenclature**
- 7. Which term magnifies the image formed by the objective?**
- A. Eyepiece**
 - B. Reflecting telescope**
 - C. Microscope**
 - D. Electron dot diagram**
- 8. What term refers to the scientific study of how living things are classified?**
- A. Classification**
 - B. Taxonomy**
 - C. Binomial nomenclature**
 - D. Prokaryote**
- 9. Which term describes the outward-curving mirror?**
- A. Concave Mirror**
 - B. Focal Point**
 - C. Optical Axis**
 - D. Convex Mirror**
- 10. Scientists who study fossils are called?**
- A. Petrified Fossils**
 - B. Cast**
 - C. Trace Fossils**
 - D. Paleontologists**

Answers

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

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Explanations

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1. A community of organisms where there are several interrelated food chains.

- A. Food chain**
- B. Carnivore**
- C. Food web**
- D. Herbivore**

In ecosystems, feeding relationships form connections that go beyond a single straight line. When a community has several interrelated food chains, energy moves along many pathways, creating a complex network of who eats whom. That interconnected structure is a food web. A food chain is just one direct line from producer to one or two consumers, which is much simpler and doesn't capture all the connections. Carnivores and herbivores describe types of organisms based on what they eat, not the overall pattern of feeding relationships in the community. So, the term that best fits a community with multiple interrelated food chains is a food web.

2. What is formed when two atoms share electrons?

- A. Ionic Bond**
- B. Crystal**
- C. Covalent Bond**
- D. Molecular Compound**

Sharing electrons forms a covalent bond. When two atoms share one or more pairs of electrons, they create a bond that holds the atoms together and helps both achieve a more stable electron configuration. This type of bond is common when nonmetals join, and it's the mechanism behind many molecules like H₂, O₂, and CH₄. An ionic bond, by contrast, comes from transferring electrons and resulting charged ions. A crystal refers to a solid, repeating arrangement of atoms, not the bond itself. A molecular compound is a substance made of molecules held together by covalent bonds, but the specific bonding process described here is covalent bonding.

3. Which compound contains only carbon and hydrogen?

- A. Organic Compound**
- B. Hydrocarbon**
- C. Structural Formula**
- D. Isomer**

A compound that contains only carbon and hydrogen is called a hydrocarbon. Hydrocarbons are a specific type of organic compound, defined by having no atoms other than C and H. That means any substance with oxygen, nitrogen, or other elements isn't a hydrocarbon, even though it might still be organic. A structural formula is just a way to show how the atoms are bonded, not a description of what elements are present. An isomer refers to molecules with the same formula but different arrangements, which is about structure, not about being exclusively carbon and hydrogen.

4. Which term refers to the building blocks that make up DNA and RNA?

- A. Amino acid**
- B. Ribonucleotide**
- C. Nucleic Acid**
- D. Nucleotide**

Nucleotides are the building blocks of DNA and RNA. Each one contains a sugar (deoxyribose in DNA or ribose in RNA), a phosphate group, and a nitrogenous base. These units link together through phosphodiester bonds to form the long chains that make up genetic material. The whole molecule is called a nucleic acid, not the individual blocks. While amino acids form proteins and ribonucleotides are specific to RNA, the general building block for both DNA and RNA is the nucleotide.

5. A charged particle formed from more than one atom is called what?

- A. Ion**
- B. Valence electrons**
- C. Electron dot diagram**
- D. Polyatomic ions**

A charged particle formed from more than one atom is called a polyatomic ion. This term refers to ions that are made up of two or more atoms bonded together and collectively carry a net positive or negative charge. Examples include sulfate (SO_4^{2-}), nitrate (NO_3^-), and ammonium (NH_4^+). In contrast, a charged particle formed from a single atom is a monatomic ion, like Na^+ or Cl^- . Valence electrons are the outer electrons involved in bonding, and an electron dot diagram is a way to visualize those electrons, not a cluster of atoms with a charge. So the description fits polyatomic ion.

6. Which term is represented by a branching diagram showing evolutionary relationships?

- A. Shared derived characteristics**
- B. Branching tree diagram**
- C. Solution**
- D. Binomial nomenclature**

A branching diagram that shows how evolutionary relationships unfold is a branching tree diagram. This type of diagram visually represents how species diverge from common ancestors over time, with branches tracing the lineages leading to present-day organisms. The branching tree diagram is the exact picture used to illustrate these relationships, so it matches the prompt perfectly. Shared derived characteristics are traits used to infer these relationships, but they're not the diagram itself. A solution is unrelated, and binomial nomenclature is the naming system for species.

7. Which term magnifies the image formed by the objective?

- A. Eyepiece**
- B. Reflecting telescope**
- C. Microscope**
- D. Electron dot diagram**

The eyepiece is what enlarges the image formed by the objective. In optical instruments like telescopes and microscopes, the objective (lens or mirror) collects light and creates an intermediate image of the object. That image is then viewed through the eyepiece, which acts like a small magnifying glass to enlarge the image for your eye, increasing its apparent size and detail. Even in a reflecting telescope, where mirrors form the initial image, the eyepiece serves the same role of magnifying that image for comfortable viewing. The other option shown isn't related to magnification in this context—an electron dot diagram is a chemistry concept and doesn't involve optical imaging.

8. What term refers to the scientific study of how living things are classified?

- A. Classification**
- B. Taxonomy**
- C. Binomial nomenclature**
- D. Prokaryote**

Taxonomy is the science that studies how living things are classified. It organizes organisms into a hierarchical system based on shared traits and evolutionary relationships, from broad groups like domains and kingdoms down to species. It also covers naming organisms with binomial nomenclature (two-part names) as part of the organized framework. So the term for the study of how living things are classified is taxonomy. Classification describes the act of sorting into groups, binomial nomenclature is the naming convention used within taxonomy, and prokaryote refers to a type of organism lacking a nucleus, not the study of classification.

9. Which term describes the outward-curving mirror?

- A. Concave Mirror**
- B. Focal Point**
- C. Optical Axis**
- D. Convex Mirror**

An outward-curving mirror is a convex mirror. The reflective surface bulges toward you, so light rays that hit it spread apart after reflecting. When you extend those rays backward, they appear to originate from a point behind the mirror, called a virtual focal point. Because the rays diverge, convex mirrors always form virtual, upright, and smaller images rather than real ones. That's why you often see convex mirrors used for wide-angle visibility, like on car side mirrors. In contrast, a concave mirror curves inward and can produce real or magnified images depending on distance to the object. The focal point is the location where parallel rays meet (or appear to come from, in the virtual case), and the optical axis is the straight line through the mirror's center of curvature and vertex.

10. Scientists who study fossils are called?

- A. Petrified Fossils
- B. Cast
- C. Trace Fossils
- D. Paleontologists**

The idea being tested is who studies fossils. A paleontologist is a scientist who specializes in fossils, examining preserved remains and traces to learn about ancient organisms, how they lived, and the environments they inhabited. They use fossils to understand evolution, species diversity, and changes in Earth's history. The other terms refer to the fossils themselves, not the people who study them: petrified fossils are fossils turned to stone through mineral replacement; a cast is a fossil formed when mineral-rich sediment fills a mold; trace fossils are indirect evidence of life, like footprints or burrows, showing activity rather than the organism itself.

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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://californiacast.examzify.com>

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

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