

DUAL ENROLLMENT PHYSICAL SCIENCE MIDTERM 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. A reaction that gives off energy to the surroundings is called
 - A. Exothermic
 - B. Endothermic
 - C. Catalytic
 - D. Irreversible
2. Which instrument is used to measure humidity?
 - A. Psychrometer
 - B. Barometer
 - C. Hygrometer
 - D. Thermometer
3. Which chemical formula represents hydrochloric acid?
 - A. H_2O
 - B. H_2SO_4
 - C. HCl
 - D. NH_3
4. Hydrologic Cycle is another name for the water cycle.
 - A. Hydrologic Cycle
 - B. Water Cycle
 - C. Atmospheric Cycle
 - D. Carbon Cycle
5. What is the sum of the atomic masses of all atoms in a compound as given in its chemical formula called?
 - A. Formula Mass
 - B. Atomic Mass
 - C. Law of Definite Composition
 - D. Octet Rule
6. Convert 15.0 miles to kilometers (1 mile $\approx$ 1.609 km).
 - A. 23.5 km
 - B. 24.1 km
 - C. 25.0 km
 - D. 22.7 km

7. What is the SI base unit for mass?

- A. Kilogram (kg)
- B. Meter (m)
- C. Second (s)
- D. Kelvin (K)

8. The amount of water is the same as the ____.

- A. Beginning of Time
- B. Clean Water
- C. Ocean Depth
- D. Rainwater

9. A negatively charged ion; A positively charged ion

- A. Cation; Anion
- B. Anion; Cation
- C. Ion; Molecule
- D. Neutron; Proton

10. Which hydrocarbons contain carbon-carbon triple bonds?

- A. Alkanes
- B. Alkenes
- C. Alkynes
- D. Cycloalkanes

Answers

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

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Explanations

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1. A reaction that gives off energy to the surroundings is called

- A. Exothermic
- B. Endothermic
- C. Catalytic
- D. Irreversible

Exothermic describes a reaction that releases energy to the surroundings. This energy release shows up as heat (and sometimes light), so the surroundings get warmer. The idea is that the reactants start with more energy than the products, and the excess energy leaves the system. In contrast, endothermic reactions absorb energy from the surroundings, which is why they feel cold. Catalysis involves a substance that speeds up the reaction without changing the overall energy change, and irreversible refers to whether the reaction can be easily reversed—not to energy transfer. So, the word that fits is exothermic.

2. Which instrument is used to measure humidity?

- A. Psychrometer
- B. Barometer
- C. Hygrometer
- D. Thermometer

Humidity is the amount of water vapor in the air, and one classic way to determine it is by comparing how quickly water can evaporate from a surface in the air. A psychrometer does exactly that by using two thermometers: a dry-bulb thermometer and a wet-bulb thermometer (the latter has a wick soaked in water). As air passes by, evaporation from the wet wick cools the wet-bulb thermometer. The temperature difference between the dry and wet bulbs depends on how much water vapor is already in the air—the drier the air, the larger the difference; the more humid the air, the smaller the difference. By reading that difference and using a chart or calculation, you can find the relative humidity. In contrast, a barometer measures air pressure, a thermometer measures temperature, and a hygrometer is a device that directly senses humidity through changes in materials or electronics. The psychrometer is a practical instrument specifically tied to determining humidity via the temperature-difference method, which is why it's used to measure humidity.

3. Which chemical formula represents hydrochloric acid?

- A. H₂O
- B. H₂SO₄
- C. HCl
- D. NH₃

Understanding chemical formulas of acids helps you identify which formula matches which substance. Hydrochloric acid is a simple compound made of hydrogen and chlorine in a 1:1 ratio, so its formula is HCl. In other words, one hydrogen atom pairs with one chlorine atom to form the molecule. When dissolved in water, HCl forms hydronium and chloride ions, but the molecular formula remains HCl, which is why this option uniquely represents hydrochloric acid. For context, H₂O is water, H₂SO₄ is sulfuric acid, and NH₃ is ammonia (a base), so they do not correspond to hydrochloric acid.

4. Hydrologic Cycle is another name for the water cycle.

- A. Hydrologic Cycle**
- B. Water Cycle
- C. Atmospheric Cycle
- D. Carbon Cycle

The main idea here is that water's movement through Earth's air, land, and oceans is described by two names for the same process. The hydrologic (or hydrological) cycle refers to the entire sequence of water moving through evaporation, transpiration, condensation, precipitation, infiltration, runoff, and groundwater flow. This is the same set of processes people mean when they say the water cycle. So the term hydrologic cycle is just another way to name the water cycle. The other options don't fit because one focuses only on atmospheric processes, and another describes carbon movement, not water.

5. What is the sum of the atomic masses of all atoms in a compound as given in its chemical formula called?

- A. Formula Mass**
- B. Atomic Mass
- C. Law of Definite Composition
- D. Octet Rule

Think of the chemical formula as a recipe that lists how many atoms of each element are in one formula unit. To find the total mass, multiply each element's atomic mass by how many atoms of that element are present, then add all those amounts together. That sum is called the formula mass. It represents the mass contributed by one formula unit in atomic mass units; if you convert to grams per mole, you're talking about the molar mass, which is numerically the same value. The other ideas aren't about summing up the masses in a compound—atomic mass is the mass of a single atom, the law of definite composition describes fixed elemental ratios, and the octet rule is about electron arrangements.

6. Convert 15.0 miles to kilometers (1 mile $\approx$ 1.609 km).

- A. 23.5 km
- B. 24.1 km**
- C. 25.0 km
- D. 22.7 km

Start by using the given conversion: 1 mile $\approx$ 1.609 kilometers. Multiply 15.0 miles by 1.609 km per mile to get the distance in kilometers: $15.0 \times 1.609 = 24.135$ km. Round to the appropriate precision based on the input (15.0 has three significant figures), which gives about 24.1 km. So the distance is approximately 24.1 kilometers. The other numbers come from using a different rounding or a slightly different factor, which would not match the calculated value as closely.

7. What is the SI base unit for mass?

A. Kilogram (kg)

B. Meter (m)

C. Second (s)

D. Kelvin (K)

In SI, mass is measured using the base unit that specifically quantifies how much matter something contains—the kilogram. This unit is the standard for mass and is defined by fixing the value of Planck's constant, linking mass to fundamental physics. The other units measure different quantities: the meter for length, the second for time, and the Kelvin for temperature. So the kilogram is the correct base unit for mass because it is the designated standard for that quantity.

8. The amount of water is the same as the ____.

A. Beginning of Time

B. Clean Water

C. Ocean Depth

D. Rainwater

The key idea is that water on Earth is part of a mostly closed system and is continually recycled through the water cycle. Water evaporates from oceans and other bodies, rises and condenses into clouds, then falls as precipitation, feeding rivers, lakes, and the land again. This cycle moves water around but doesn't significantly change the total amount available. Because of that recycling, the planet's total quantity of water has remained essentially constant since its formation, so it's the same as at the Beginning of Time. The other options point to a form or measurement of water (quality, depth, or a portion of the supply) rather than the total global amount.

9. A negatively charged ion; A positively charged ion

A. Cation; Anion

B. Anion; Cation

C. Ion; Molecule

D. Neutron; Proton

When atoms gain or lose electrons, they form charged particles called ions. If an atom gains electrons, it becomes negatively charged—that type of ion is an anion. If an atom loses electrons, it becomes positively charged—that type is a cation. So the negative ion is an anion and the positive ion is a cation, which is the pairing shown here. For context, Cl^- is an anion and Na^+ is a cation. The other options don't fit because "Ion" is a general term for any charged particle, "Molecule" usually implies neutrality, and subatomic particles like protons or neutrons aren't the ions described here.

10. Which hydrocarbons contain carbon-carbon triple bonds?

- A. Alkanes
- B. Alkenes
- C. Alkynes**
- D. Cycloalkanes

Triple bonds between carbon atoms define alkynes. In these hydrocarbons, the C–C bond is made up of one sigma and two pi bonds, which makes the bond very strong and the molecule typically linear around that bond. The carbons involved are usually sp hybridized, giving about a 180-degree angle along the bond axis. The simplest example is ethyne (acetylene), with formula C_2H_2 . Because of the triple bond, alkynes are unsaturated and can participate in reactions that add across the two pi bonds. Alkanes have only single C–C bonds and are saturated; alkenes have at least one C=C double bond; cycloalkanes are ring-shaped and contain only single bonds. So, the presence of a carbon–carbon triple bond identifies the hydrocarbon as an alkyne.

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://dualenrollmentphysicalscimidterm.examzify.com>

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

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