

NCFE PHYSICAL SCIENCE PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. What is the maximum number of electrons that the second energy level can accommodate?**
 - A. 4 electrons
 - B. 6 electrons
 - C. 8 electrons
 - D. 10 electrons
- 2. What is the primary function of an electric motor?**
 - A. To transform voltage levels
 - B. To store electrical energy
 - C. To convert electrical energy into mechanical energy
 - D. To regulate current flow
- 3. What type of friction force acts on objects that are not moving?**
 - A. Sliding
 - B. Static
 - C. Rolling
 - D. Fluid
- 4. What does acceleration measure in motion?**
 - A. Change in distance
 - B. Change in velocity over time
 - C. Constant speed
 - D. Rate of displacement
- 5. What is the SI unit of mass?**
 - A. kilogram (kg)
 - B. gram (g)
 - C. ton (t)
 - D. ounce (oz)
- 6. What is the smallest particle of an element called?**
 - A. Molecule
 - B. Atom
 - C. Ion
 - D. Particle

7. What property do colloids have regarding particle size?

- A. The particles are visible to the naked eye
- B. The particles are microscopic and uniform
- C. The particles are intermediate in size between a solution and suspension
- D. The particles are larger than those in solutions but smaller than in suspensions

8. What is an unsaturated solution?

- A. Contains the maximum amount of solute
- B. Contains less than the maximum amount of solute
- C. Contains more solute than it can hold
- D. Has reached equilibrium

9. What is a solution?

- A. A mixture where substances settle out
- B. A heterogeneous mixture
- C. A homogeneous mixture in which substances dissolve
- D. A purely single element

10. How is potential energy defined?

- A. Energy that is lost
- B. Energy in motion
- C. Stored energy
- D. Energy due to friction

Answers

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

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Explanations

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1. What is the maximum number of electrons that the second energy level can accommodate?

- A. 4 electrons
- B. 6 electrons
- C. 8 electrons**
- D. 10 electrons

The second energy level, also known as the second shell, can accommodate a maximum of eight electrons. This capacity is derived from the formula for determining the maximum number of electrons in a given energy level, which is $2n^2$, where n represents the principal quantum number of the energy level. For the second energy level, n equals 2. Calculating this gives: $2(2)^2 = 2(4) = 8$ electrons. This means that the second energy level can host eight electrons in total, filling up to the maximum allowed for that shell. The distribution of these electrons occurs in sublevels: the s sublevel can hold 2 electrons, and the p sublevel can hold 6 electrons. Collectively, this allows for a full complement of 8 electrons in the second energy level, ensuring stable electron configurations for elements in this range.

2. What is the primary function of an electric motor?

- A. To transform voltage levels
- B. To store electrical energy
- C. To convert electrical energy into mechanical energy**
- D. To regulate current flow

The primary function of an electric motor is to convert electrical energy into mechanical energy. This process is fundamental to the operation of various devices and machinery, allowing them to perform work through movement. In an electric motor, electrical energy supplied to the coils generates a magnetic field that interacts with permanent magnets, causing the motor's rotor to spin. This rotational motion can then be harnessed to drive equipment, fan blades, machinery, and many other applications. Understanding this function highlights the role of electric motors in everyday technology; they are essential in everything from household appliances to electric vehicles. This conversion of energy is key to translating the energy provided by electricity into physical movement that can do useful work.

3. What type of friction force acts on objects that are not moving?

- A. Sliding
- B. Static**
- C. Rolling
- D. Fluid

The correct answer is static friction. This force acts on objects that are at rest and prevents them from starting to move when an external force is applied. Static friction arises between surfaces that are in contact but not sliding past each other. It plays a crucial role in everyday occurrences like a book resting on a table or a parked car on a hill, where the force of static friction prevents these objects from moving until a sufficient external force overcomes it. In contrast, sliding friction occurs when two surfaces slide against each other, while rolling friction applies to objects that roll over a surface, like a wheel on a road. Fluid friction refers to the resistance encountered when an object moves through a fluid, such as water or air. By understanding these types of friction, it becomes clear why static friction is the correct answer for objects that remain stationary.

4. What does acceleration measure in motion?

- A. Change in distance
- B. Change in velocity over time**
- C. Constant speed
- D. Rate of displacement

Acceleration is defined as the rate of change of velocity with respect to time. It quantifies how quickly an object changes its speed or direction, which is crucial in understanding motion. When an object accelerates, it either speeds up, slows down, or changes direction. This means that acceleration not only involves changes in how fast the object is moving but also any changes in its course, reflecting a comprehensive measure of motion dynamics. Understanding acceleration as a change in velocity makes it clear that it's specifically concerned with alterations in an object's speed and direction per unit of time, making it distinct from other concepts related to motion. For example, constant speed refers to uniform motion without any change in velocity, and therefore does not account for acceleration in any form. Similarly, concepts like distance and displacement relate to the position of an object rather than the changes in its velocity over time. Thus, the choice that states acceleration measures change in velocity over time accurately encompasses what acceleration represents in the context of motion.

5. What is the SI unit of mass?

- A. kilogram (kg)**
- B. gram (g)
- C. ton (t)
- D. ounce (oz)

The SI unit of mass is the kilogram (kg). The kilogram is defined as the base unit of mass in the International System of Units (SI), and it is widely used in scientific and engineering applications. In the metric system, the kilogram is fundamental because it serves as the standard measure for mass from which other units are derived. For instance, 1 kilogram is equivalent to 1,000 grams, which allows for scalability within the metric system. The definition of the kilogram has been established based on the physical constant related to the Planck constant, further emphasizing its importance in precise measurements. Other units like grams, tons, and ounces are derived from or used in different contexts but do not serve as the base unit in the SI framework.

6. What is the smallest particle of an element called?

- A. Molecule
- B. Atom**
- C. Ion
- D. Particle

The smallest particle of an element is called an atom. An atom consists of a nucleus made up of protons and neutrons, surrounded by electrons that orbit the nucleus. Atoms are the fundamental building blocks of matter and retain all the chemical properties of the element they represent. For example, a single atom of carbon remains carbon regardless of its state or size. Atoms combine to form molecules, which are groups of two or more atoms bonded together. However, when referring specifically to an individual particle representing an element, the term "atom" is the appropriate choice since it defines the substance in its purest form. Other terms such as molecule, ion, and particle have different meanings in the context of chemistry. A molecule refers to two or more atoms bonded together, an ion is an atom or molecule that has gained or lost one or more electrons, resulting in a charge, and the term particle is a more general term that can refer to any small localized object. Therefore, atom is the most precise answer to the question regarding the smallest unit of an element.

7. What property do colloids have regarding particle size?

- A. The particles are visible to the naked eye
- B. The particles are microscopic and uniform
- C. The particles are intermediate in size between a solution and suspension**
- D. The particles are larger than those in solutions but smaller than in suspensions

Colloids are characterized by having particles that are intermediate in size between those found in true solutions and suspensions. In a colloid, the particles typically range from 1 nanometer to 1 micrometer in diameter, which allows them to remain dispersed throughout the medium without settling out, unlike larger particles in suspensions that may settle due to gravity. This intermediate size is key to the defining properties of colloids, as it allows them to scatter light (Tyndall effect) without being large enough to be easily visible or to settle out over time. The unique property of particle size in colloids plays a significant role in their behavior and applications in various fields, such as food science, medicine, and material science. Understanding that colloidal particles are not visible to the naked eye, nor are they uniform and microscopic like those in some solutions, helps to clarify the distinction between different types of mixtures in physical science.

8. What is an unsaturated solution?

- A. Contains the maximum amount of solute
- B. Contains less than the maximum amount of solute**
- C. Contains more solute than it can hold
- D. Has reached equilibrium

An unsaturated solution is defined as a solution that contains less than the maximum amount of solute that can be dissolved in a given amount of solvent at a specific temperature and pressure. This means that there is still capacity within the solvent to dissolve additional solute. In practical terms, if you were to add more solute to an unsaturated solution, it would continue to dissolve until it either reaches saturation or the solute can no longer dissolve due to exceeding the solubility limit. Understanding this concept is crucial in various applications such as chemical reactions, where precise amounts of reactants can significantly influence the outcome. Saturation refers to a different state of a solution. If a solution is saturated, it means that it already contains the maximum amount of solute, and any additional solute will not dissolve. Similarly, when a solution has more solute than it can hold, it is typically referred to as a supersaturated solution, which is a different concept altogether. Lastly, equilibrium refers to a state in a chemical reaction where the reactants and products remain constant over time, which does not directly define unsaturation in a solution.

9. What is a solution?

- A. A mixture where substances settle out
- B. A heterogeneous mixture
- C. A homogeneous mixture in which substances dissolve**
- D. A purely single element

A solution is best defined as a homogeneous mixture in which substances dissolve completely, resulting in a mixture that has a uniform composition throughout. This means that when one substance, such as salt, mixes with another, such as water, the salt breaks down into its individual ions and becomes evenly distributed within the water. The resulting mixture does not have distinct layers or parts that are visibly different, which is characteristic of a homogeneous mixture. In contrast, other options describe different forms of mixtures or substances. A mixture where substances settle out refers to a suspension, which is not uniform in composition and can have layers. A heterogeneous mixture contains visibly different substances or phases that can be distinguished easily and are not uniformly distributed. Lastly, a purely single element refers to a substance made up of only one type of atom, which does not qualify as a mixture at all. This distinction is crucial when identifying types of matter in physical science.

10. How is potential energy defined?

- A. Energy that is lost
- B. Energy in motion
- C. Stored energy**
- D. Energy due to friction

Potential energy is defined as stored energy, which refers to energy that an object possesses due to its position or condition. This type of energy has the potential to be converted into other forms of energy, such as kinetic energy, which is the energy of motion. For instance, when an object is elevated above the ground, it stores gravitational potential energy because of its position in a gravitational field. When the object is allowed to fall, that potential energy is transformed into kinetic energy as the object moves downwards. Stored energy can also take other forms, such as elastic potential energy in a compressed spring or chemical potential energy in fuel. By understanding potential energy as energy that is not currently in motion but has the capacity to do work when released or transformed, it becomes clear why this concept is fundamental in the study of physical sciences.

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://ncfephysicalscience.examzify.com>

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

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