

GACE MIDDLE GRADES 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 type of volcanic structure does not currently show any signs of activity and is considered unlikely to erupt again?**
 - A. Active volcano
 - B. Dormant volcano
 - C. Extinct volcano
 - D. Cinder cone volcano

- 2. Which body system is responsible for supporting and protecting the body?**
 - A. Nervous system
 - B. Muscular system
 - C. Skeletal system
 - D. Circulatory system

- 3. What are the tides called when the Moon is not aligned with the Sun, resulting in less extreme tides?**
 - A. Spring tides
 - B. Neap tides
 - C. High tides
 - D. Low tides

- 4. Where are pedocals typically found?**
 - A. In tropical climates
 - B. In grasslands and brush in Western North America
 - C. In wetter regions rich in iron
 - D. In mountainous areas

- 5. What is the main function of the respiratory system?**
 - A. To circulate blood throughout the body
 - B. To take in oxygen and release carbon dioxide
 - C. To digest food and absorb nutrients
 - D. To regulate body temperature

- 6. Which type of bond is characterized by electrical attraction between oppositely charged ions?**
- A. Metallic bond
 - B. Covalent bond
 - C. Ionic bond
 - D. Hydrogen bond
- 7. What term refers to the number of protons in the nucleus of an atom?**
- A. Atomic mass
 - B. Molecular number
 - C. Atomic number
 - D. Elemental charge
- 8. Which of the following waves requires a medium to travel?**
- A. Light waves
 - B. X-rays
 - C. Sound waves
 - D. Radio waves
- 9. What does Newton's 2nd law of motion state about acceleration?**
- A. It is constant.
 - B. It is only affected by mass.
 - C. It occurs without any force.
 - D. It occurs when a net force acts on an object.
- 10. What mutation type involves the loss of a piece of DNA due to breakage?**
- A. Duplication mutation
 - B. Breakage mutation
 - C. Inversion mutation
 - D. Translocation mutation

Answers

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

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Explanations

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1. What type of volcanic structure does not currently show any signs of activity and is considered unlikely to erupt again?

- A. Active volcano
- B. Dormant volcano
- C. Extinct volcano**
- D. Cinder cone volcano

An extinct volcano is characterized by a complete lack of activity, indicating that it is unlikely to erupt again in the future. This classification is based on geological assessments, which show that the last eruption occurred so long ago that there is no expectation of future volcanic activity. Extinct volcanoes have typically weathered and eroded over time, and their magma reservoirs are considered to be depleted. In contrast, active volcanoes show current volcanic activity or are expected to erupt in the near future, while dormant volcanoes, though currently inactive, have the potential to erupt again. Cinder cone volcanoes are a type of structure that can be either active or dormant but do not inherently indicate whether they will erupt again. Therefore, the designation of a volcano as extinct clearly reflects its unlikelihood of future eruptions.

2. Which body system is responsible for supporting and protecting the body?

- A. Nervous system
- B. Muscular system
- C. Skeletal system**
- D. Circulatory system

The skeletal system is the correct answer because it serves as the foundational structure of the human body. It provides support by maintaining the body's shape and allowing for upright posture. Additionally, the skeletal system protects vital organs; for example, the skull encases the brain, and the rib cage shields the heart and lungs from physical damage. Beyond these functions, the skeletal system also plays a role in the production of blood cells and storage of minerals, further highlighting its importance in maintaining overall body health and stability.

3. What are the tides called when the Moon is not aligned with the Sun, resulting in less extreme tides?

- A. Spring tides
- B. Neap tides**
- C. High tides
- D. Low tides

When the Moon is not aligned with the Sun, the gravitational pull exerted by the Sun and the Moon on Earth's oceans results in less extreme tidal changes. These milder tides occur during specific phases of the lunar cycle, particularly when the Moon is in its first or third quarter. This phenomenon is referred to as neap tides. During neap tides, the gravitational forces of the Moon and the Sun counteract each other, leading to lower high tides and higher low tides compared to the more intense spring tides, which occur when the Earth, the Moon, and the Sun are in alignment. Understanding this relationship helps explain how celestial mechanics influence ocean tides.

4. Where are pedocals typically found?

- A. In tropical climates
- B. In grasslands and brush in Western North America**
- C. In wetter regions rich in iron
- D. In mountainous areas

Pedocals are soil types that are notably found in drier regions, particularly in grasslands and brush areas of Western North America. These soils generally develop in environments characterized by limited moisture and are often associated with regions that experience low rainfall. The accumulation of calcium carbonate is a key feature of pedocals, resulting from the process of evaporation and the leaching of nutrients, which occurs in these semi-arid conditions. This specific climate contributes to the formation and characteristics of pedocals, making them specifically suited to the grasslands and brush ecosystems found in this region.

5. What is the main function of the respiratory system?

- A. To circulate blood throughout the body
- B. To take in oxygen and release carbon dioxide**
- C. To digest food and absorb nutrients
- D. To regulate body temperature

The main function of the respiratory system is to take in oxygen and release carbon dioxide. This gas exchange occurs in the lungs, where oxygen from the air is absorbed into the bloodstream, and carbon dioxide, a waste product of cellular respiration, is expelled from the body. This process is crucial for maintaining the body's oxygen levels and removing carbon dioxide, which is vital for cellular function and overall metabolic processes. The respiratory system plays a key role in supporting cellular respiration, allowing cells to produce energy. The oxygen taken in through inhalation is transported by the blood to cells throughout the body, while the carbon dioxide produced as waste is transported back to the lungs for exhalation. This keeps the body's internal environment balanced and supports life. The other options relate to functions of different systems in the body; for instance, circulation is managed by the cardiovascular system, digestion involves the digestive system, and temperature regulation is primarily the role of the integumentary system and thermoregulatory mechanisms. These distinct roles highlight the specialized functions of different organ systems in maintaining homeostasis, but they do not pertain to the primary function of the respiratory system.

6. Which type of bond is characterized by electrical attraction between oppositely charged ions?

- A. Metallic bond
- B. Covalent bond
- C. Ionic bond**
- D. Hydrogen bond

The type of bond characterized by electrical attraction between oppositely charged ions is the ionic bond. In ionic bonding, one atom donates electrons to another, leading to the formation of positively charged ions (cations) and negatively charged ions (anions). The resultant attraction between these oppositely charged ions creates a strong ionic bond. This process is typically observed between metals and nonmetals, where the metal loses electrons and becomes positively charged, while the nonmetal gains electrons and becomes negatively charged. In contrast, metallic bonds involve the pooling of electrons among a lattice of metal atoms, resulting in conductivity and malleability, but they do not involve the attraction between charged ions. Covalent bonds are formed when two atoms share electrons rather than transferring them, and hydrogen bonds are relatively weak attractions that occur when hydrogen is covalently bonded to a highly electronegative atom, such as oxygen or nitrogen. Each of these other bond types functions differently than an ionic bond, which is specifically defined by the attraction of charged ions.

7. What term refers to the number of protons in the nucleus of an atom?

- A. Atomic mass
- B. Molecular number
- C. Atomic number**
- D. Elemental charge

The term that refers to the number of protons in the nucleus of an atom is known as the atomic number. This fundamental property of an element determines its identity and position in the periodic table. The atomic number not only signifies the number of protons but also indicates the number of electrons in a neutral atom, which ultimately influences the atom's chemical behavior. In contrast, atomic mass refers to the weighted average mass of an atom's isotopes, taking into consideration both protons and neutrons. The molecular number is not a standard term in chemistry; it often causes confusion with molecular weight, which is the sum of the atomic masses of all atoms in a molecule. Elemental charge pertains to the overall charge of an atom or ion, influenced by the number of protons and electrons but does not specifically indicate the total number of protons. Thus, the precise definition and significance of atomic number make it the correct choice.

8. Which of the following waves requires a medium to travel?

- A. Light waves
- B. X-rays
- C. Sound waves**
- D. Radio waves

Sound waves are classified as mechanical waves, which means they require a medium (such as air, water, or solids) to transmit energy. This is due to the fact that sound waves propagate through the vibration of particles within the medium. When a sound is produced, it generates pressure changes that move through the medium, allowing the sound to be heard. In contrast, both light waves and X-rays are types of electromagnetic waves that do not require a medium to travel. These waves can propagate through the vacuum of space because they are oscillations of electric and magnetic fields. Radio waves also belong to the category of electromagnetic waves and behave similarly to light and X-rays; they can travel through a vacuum and do not need a medium. The requirement of a medium for sound waves is evidenced by the fact that sound cannot travel in a vacuum, such as in outer space. Thus, sound waves are unique among the options as they need a material medium for their propagation.

9. What does Newton's 2nd law of motion state about acceleration?

- A. It is constant.
- B. It is only affected by mass.
- C. It occurs without any force.
- D. It occurs when a net force acts on an object.**

Newton's 2nd law of motion establishes a direct relationship between the net force acting on an object, its mass, and the resulting acceleration. The fundamental principle is captured in the formula $F = ma$, where F represents the net force, m stands for mass, and a denotes acceleration. This law asserts that acceleration occurs only when a net force is applied to an object. In practical terms, this means that if there is no net force acting on an object, it will not accelerate; instead, it will remain at rest or continue to move at a constant velocity. This is a key aspect of understanding the dynamics of motion—observing that without an external force, changes in motion (or acceleration) cannot occur. This concept is crucial for explaining various physical phenomena, such as why a parked car stays stationary until a force (like a push or the application of the engine's power) is applied. The interplay of force and mass in producing acceleration is central to many applications in physics and engineering.

10. What mutation type involves the loss of a piece of DNA due to breakage?

- A. Duplication mutation
- B. Breakage mutation**
- C. Inversion mutation
- D. Translocation mutation

The type of mutation that involves the loss of a piece of DNA due to breakage is indeed a breakage mutation. This kind of mutation occurs when a segment of DNA is physically broken and lost, leading to a decrease in the genetic material. Breakage mutations can result from various factors, including environmental influences like radiation or chemicals that can cause the DNA strands to break. This loss can impact the organism by removing essential genes or regulatory sequences, potentially leading to disorders or developmental issues. In contrast, duplication mutations involve the replication of a section of DNA, resulting in multiple copies of a segment. Inversion mutations occur when a segment of DNA is flipped and reattached, maintaining the same amount of genetic material but altering the order of the genes. Translocation mutations involve the movement of a segment from one chromosome to another, which can disrupt gene function but does not typically result in the loss of DNA.

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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://gacemiddlegradesscience.examzify.com>

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

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