

ABCTE SCIENCE PRACTICE EXAM (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. According to Dalton's Law, what is the relationship between the total pressure and partial pressures in a mixture of non-reacting gases?**
 - A. The total pressure is equal to the highest partial pressure.
 - B. The total pressure is equal to the lowest partial pressure.
 - C. The total pressure is equal to the average of partial pressures.
 - D. The total pressure is equal to the sum of partial pressures.

- 2. Which process includes the formation of haploid cells?**
 - A. Mitosis
 - B. Meiosis
 - C. Fertilization
 - D. Cloning

- 3. What happens to heat energy in an endothermic process?**
 - A. It's released into the surroundings
 - B. It is stored as potential energy
 - C. It remains constant throughout the reaction
 - D. It is absorbed from the surroundings

- 4. What type of rock is formed from particles pressed and cemented together?**
 - A. Metamorphic rock
 - B. Sedimentary rock
 - C. Igneous rock
 - D. Volcanic rock

- 5. In the nitrogen cycle, what role do bacteria play?**
 - A. They absorb nitrogen from soil
 - B. They convert nitrogen compounds for plant use
 - C. They produce nitrogen gas exclusively
 - D. They compete with plants for nutrients

- 6. Which gland produces hormones that regulate metabolism, body heat, and bone growth?**
- A. Adrenal gland
 - B. Thyroid gland
 - C. Pituitary gland
 - D. Hypothalamus
- 7. What consequence does freezing point depression have?**
- A. Liquid remains at a constant temperature
 - B. Freezing occurs at a higher temperature
 - C. Freezing occurs at a lower temperature
 - D. Liquid will not freeze at any temperature
- 8. What does longitude measure in relation to local noon and prime time?**
- A. The angle of the Earth's rotation
 - B. The difference in time
 - C. The distance around the Earth
 - D. The latitude alignment
- 9. Which of the following is a function of bursa?**
- A. Providing nutrients
 - B. Reducing friction
 - C. Storing fat
 - D. Transmitting electrical signals
- 10. Which term best describes a joint that connects bones via cartilage?**
- A. Suture
 - B. Symphysis
 - C. Joint capsule
 - D. Cartilaginous joint

Answers

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

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Explanations

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1. According to Dalton's Law, what is the relationship between the total pressure and partial pressures in a mixture of non-reacting gases?

- A. The total pressure is equal to the highest partial pressure.
- B. The total pressure is equal to the lowest partial pressure.
- C. The total pressure is equal to the average of partial pressures.
- D. The total pressure is equal to the sum of partial pressures.**

Dalton's Law of Partial Pressures states that in a mixture of non-reacting gases, the total pressure exerted by the mixture is equal to the sum of the partial pressures of each individual gas in the mixture. Each gas contributes to the overall pressure based on its own volume and temperature, independent of the other gases present. This means that if you were to measure the pressure exerted by each gas separately and then add these pressures together, you would arrive at the total pressure of the gas mixture. This relationship is fundamental in understanding how gases behave in mixtures, allowing for calculations involving gas laws, ideal gas behavior, and applications in various scientific fields such as chemistry and meteorology. Thus, the correct statement summarizing this relationship reflects the essence of Dalton's principle.

2. Which process includes the formation of haploid cells?

- A. Mitosis
- B. Meiosis**
- C. Fertilization
- D. Cloning

The formation of haploid cells occurs during meiosis, which is a specialized type of cell division that reduces the chromosome number by half, resulting in four genetically distinct haploid cells from one diploid cell. This process is crucial for sexual reproduction because it produces gametes (sperm and eggs) that contain one set of chromosomes. In detail, meiosis consists of two consecutive divisions—meiosis I and meiosis II. During meiosis I, homologous chromosomes are separated, which reduces the chromosome number from diploid (two sets) to haploid (one set). Then, meiosis II resembles mitosis but does not further reduce the chromosome number, as it separates the sister chromatids of each chromosome, resulting in four haploid daughter cells. The other processes involve diploid cells or do not lead directly to the formation of haploid cells. Mitosis maintains the diploid chromosome number, whereas fertilization combines two haploid gametes to form a diploid zygote. Cloning produces genetically identical diploid organisms, thus not contributing to haploid cell formation.

3. What happens to heat energy in an endothermic process?

- A. It's released into the surroundings
- B. It is stored as potential energy
- C. It remains constant throughout the reaction
- D. It is absorbed from the surroundings**

In an endothermic process, heat energy is absorbed from the surroundings. This means that the system undergoing the reaction requires energy input in order to proceed. The absorption of heat leads to a decrease in the temperature of the surrounding environment, as energy is drawn in to facilitate the reaction. This characteristic is fundamental to endothermic reactions, which include processes like photosynthesis, where plants capture sunlight to convert carbon dioxide and water into glucose and oxygen. The absorbed heat energy is then utilized to break bonds in the reactants, enabling the formation of products and often resulting in an increase in the system's internal energy.

4. What type of rock is formed from particles pressed and cemented together?

- A. Metamorphic rock
- B. Sedimentary rock**
- C. Igneous rock
- D. Volcanic rock

Sedimentary rock is formed through the processes of compaction and cementation of particles, which can include fragments of other rocks, minerals, and organic materials. This type of rock often forms in layers over time, typically in environments like riverbeds, lakes, and oceans where sediments accumulate. The particles are deposited, compacted under pressure, and then cemented together by minerals that precipitate from water, effectively binding them into solid rock. In contrast, metamorphic rocks originate from the alteration of existing rocks (igneous, sedimentary, or other metamorphic rocks) under heat and pressure, without melting. Igneous rocks are formed from the solidification of molten material, either magma or lava, and volcanic rock is a type of igneous rock that comes specifically from lava that cools on the Earth's surface. Each of these other types of rocks has distinct formation processes that do not involve the compaction and cementation of particles as seen in sedimentary rocks.

5. In the nitrogen cycle, what role do bacteria play?

- A. They absorb nitrogen from soil
- B. They convert nitrogen compounds for plant use**
- C. They produce nitrogen gas exclusively
- D. They compete with plants for nutrients

Bacteria play a crucial role in the nitrogen cycle, particularly in facilitating the conversion of nitrogen compounds so that plants can utilize them effectively. This process involves several steps, including nitrogen fixation, where certain bacteria convert atmospheric nitrogen into ammonia, and nitrification, where ammonia is converted into nitrites and then nitrates, the forms of nitrogen that plants can absorb and use for their growth and development. Nitrogen fixation is essential because atmospheric nitrogen (N₂) is not directly usable by most living organisms, including plants. The bacteria involved in this process—such as Rhizobium, which associates with leguminous plants—transform nitrogen gas into forms that are assimilable by plants. Furthermore, nitrifying bacteria convert the ammonia from waste products or organic matter into nitrates, further enhancing soil fertility and supporting plant uptake. Thus, the significant role of bacteria in the nitrogen cycle is primarily centered on their ability to convert nitrogen compounds into usable forms for plants, which is vital for healthy ecosystem functioning.

6. Which gland produces hormones that regulate metabolism, body heat, and bone growth?

- A. Adrenal gland
- B. Thyroid gland**
- C. Pituitary gland
- D. Hypothalamus

The thyroid gland is essential for regulating metabolism, body heat, and bone growth because it produces critical hormones such as thyroxine (T4) and triiodothyronine (T3). These hormones influence the rate of metabolic processes in the body, which includes how quickly or slowly the body uses energy. By controlling metabolic rate, the thyroid gland directly impacts body heat production since metabolism generates and regulates heat. Moreover, thyroid hormones play a significant role in bone growth and development. They work in conjunction with other hormones, such as growth hormone and sex hormones, to ensure proper bone maturation and density. An imbalance in thyroid hormone levels can lead to various health issues, including growth disorders and changes in body temperature regulation. The other glands mentioned have different primary functions. The adrenal gland is responsible for producing hormones related to stress response, including cortisol and adrenaline. The pituitary gland acts as the "master gland" that regulates other endocrine glands and produces hormones that affect growth, reproduction, and metabolism to some extent but does not directly produce the primary hormones for metabolism regulation. The hypothalamus is primarily involved in homeostatic functions and regulates various bodily functions, including temperature and hunger, but does not produce the hormones that primarily regulate metabolism and growth like

7. What consequence does freezing point depression have?

- A. Liquid remains at a constant temperature
- B. Freezing occurs at a higher temperature
- C. Freezing occurs at a lower temperature**
- D. Liquid will not freeze at any temperature

Freezing point depression refers to the phenomenon where the freezing point of a solvent decreases when a solute is added. This occurs because the presence of solute particles interferes with the ability of the solvent molecules to form a solid structure. As a result, freezing occurs at a lower temperature than it would for the pure solvent alone. For instance, when salt is added to water, the freezing point drops below 0 degrees Celsius, meaning that to freeze, the water must reach a temperature lower than its normal freezing point. This concept is significant in various applications, such as in de-icing roads in winter or understanding biological processes that depend on freezing point changes. The correct choice points directly to the essential nature of how freezing points are altered when solutes are introduced into a solvent, accurately reflecting the principle of freezing point depression.

8. What does longitude measure in relation to local noon and prime time?

- A. The angle of the Earth's rotation
- B. The difference in time**
- C. The distance around the Earth
- D. The latitude alignment

Longitude is a geographic coordinate that plays a crucial role in determining time zones and the timing of local noon. It measures the angle east or west from the Prime Meridian, which is established at 0 degrees longitude. When considering local noon, which occurs when the sun is at its highest point in the sky for a specific location, the difference in longitude between two places directly correlates to the difference in their local noon times. For every 15 degrees of longitude, there is a difference of one hour in solar time. This means that if one location is located 15 degrees east of another, it will experience local noon one hour later. Thus, the correct answer highlights the relationship between longitude and the corresponding time differences experienced at different longitudes around the Earth. This concept is essential for understanding how geographic position affects timekeeping, especially when crossing time zones.

9. Which of the following is a function of bursa?

- A. Providing nutrients
- B. Reducing friction**
- C. Storing fat
- D. Transmitting electrical signals

The function of bursa primarily involves reducing friction. Bursa are small, fluid-filled sacs located between bones and soft tissues, such as muscles, tendons, and skin. They serve as cushions, allowing these structures to move smoothly over one another during activities such as walking, running, or lifting. This reduction in friction is crucial for preventing damage to bone and soft tissues during movement, thereby facilitating ease of motion. While providing nutrients, storing fat, and transmitting electrical signals are functions associated with other structures in the body, they do not describe the primary role of bursa. Nutrient provision typically involves blood vessels and organs that perform metabolic functions, fat storage relates to adipose tissue, and the transmission of electrical signals is characteristic of nerve cells and neural tissue, not bursa.

10. Which term best describes a joint that connects bones via cartilage?

- A. Suture
- B. Symphysis**
- C. Joint capsule
- D. Cartilaginous joint

The term that best describes a joint connecting bones via cartilage is "cartilaginous joint." This type of joint allows for limited movement and is characterized by the presence of cartilage between the connecting bones. Cartilaginous joints can take two main forms: primary (or synchondroses), which are connected by hyaline cartilage, and secondary (or symphyses), which are connected by fibrocartilage. In this case, while "symphysis" refers specifically to a certain type of cartilaginous joint (such as the pubic symphysis in the pelvis), it does not encompass all cartilaginous joints. The broader category is more accurately described as "cartilaginous joint," as it includes both types. The other options pertain to different concepts. A suture is a type of fibrous joint found in the skull that does not involve cartilage at all. A joint capsule surrounds and encases the entire joint, not specifically relating to the type of connective tissue. Therefore, the most encompassing and accurate answer, considering all cartilaginous connections, is "cartilaginous joint."

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:

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

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