

Canadian National Institute of Health (CNIH) Entrance Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

This is a sample study guide. To access the full version with hundreds of 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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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!

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Questions

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- 1. Which type of evolutionary mechanism is likely to result in the most rapid changes in a population's traits?**
 - A. Natural selection**
 - B. Mutation**
 - C. Genetic drift**
 - D. Gene flow**

- 2. Which nitrogenous bases are considered pyrimidines?**
 - A. Adenine and Guanine**
 - B. Cytosine, Thymine, and Uracil**
 - C. Adenine, Uracil**
 - D. Guanine and Thymine**

- 3. What does transposition refer to in genetics?**
 - A. The process of creating duplications in DNA**
 - B. The flipping of a segment of DNA within a chromosome**
 - C. The movement of a gene sequence from one chromosome location to another**
 - D. Loss of genetic material during cell division**

- 4. Which structure allows a host cell to absorb endosymbionts?**
 - A. Cell wall**
 - B. Plasma membrane**
 - C. Nucleus**
 - D. Ribosomes**

- 5. During which phase of respiration does the diaphragm contract and move down?**
 - A. Expiration**
 - B. Inspiration**
 - C. External respiration**
 - D. Internal respiration**

6. During which phase of the cell cycle does the cell duplicate its contents except for chromosomes?

- A. G1 phase**
- B. G2 phase**
- C. S phase**
- D. G0 phase**

7. What occurs when habitat loss and pollution impact species in a specific region?

- A. Species migration**
- B. Extirpation**
- C. Habitat restoration**
- D. Populational recovery**

8. Which of the following best describes polysaccharides?

- A. Composed of fatty acids**
- B. Made of multiple amino acids**
- C. Long chains of simple sugars**
- D. Soluble in water**

9. What characterizes the telophase of mitosis?

- A. Centrosome becomes more defined**
- B. Chromosomes uncoil and nuclear membrane reforms**
- C. Chromatids line up along the equatorial plate**
- D. Sister chromatids separate**

10. What does the term inversion refer to in genetics?

- A. Insertion of additional genetic material into the chromosome**
- B. Flipping and reinsertion of a chromosome segment backwards**
- C. Cutting and relocating a segment of DNA to another chromosome**
- D. Repeating a segment of DNA within the same chromosome**

Answers

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

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Explanations

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1. Which type of evolutionary mechanism is likely to result in the most rapid changes in a population's traits?

A. Natural selection

B. Mutation

C. Genetic drift

D. Gene flow

Natural selection is a key evolutionary mechanism that can lead to rapid changes in a population's traits due to its focused and adaptive nature. In natural selection, individuals with traits that provide a survival or reproductive advantage in a specific environment are more likely to pass on those advantageous traits to the next generation. Over time, this process can significantly alter the genetic makeup of the population. Natural selection operates on existing genetic variation within a population, allowing beneficial traits to increase in frequency. For instance, if a specific trait enhances an organism's ability to find food or avoid predators, individuals with that trait will reproduce more successfully, leading to a faster rate of change in the population compared to other mechanisms. In contrast, while mutation introduces new genetic variations, it may not always result in advantageous traits. Genetic drift changes allele frequencies randomly and is more pronounced in small populations, often leading to less predictable changes. Gene flow involves the exchange of genes between populations, which can introduce new traits but often stabilizes rather than rapidly changes the traits within a single population. Therefore, natural selection is the most effective mechanism for driving quick adaptations and shaping the traits of a population in response to environmental pressures.

2. Which nitrogenous bases are considered pyrimidines?

A. Adenine and Guanine

B. Cytosine, Thymine, and Uracil

C. Adenine, Uracil

D. Guanine and Thymine

Pyrimidines are a type of nitrogenous base that have a single-ring structure, which distinguishes them from purines, which contain a double-ring structure. The nitrogenous bases that fall into the pyrimidine category include cytosine, thymine, and uracil. Cytosine is found in both DNA and RNA, thymine is primarily found in DNA, and uracil is present in RNA instead of thymine. This classification is crucial in understanding the structure of nucleic acids, as it helps determine base pairing during DNA replication and RNA transcription processes. The specific mention of these three bases as pyrimidines highlights their important roles in genetic information storage and transfer, making this selection the accurate answer. Understanding this classification is fundamental for studies related to molecular biology, genetics, and biochemistry, as it lays the groundwork for understanding nucleic acid structure and function. Other options do not include all the necessary pyrimidines or do not fit into the pyrimidine category at all, reinforcing the importance of recognizing the correct bases.

3. What does transposition refer to in genetics?

- A. The process of creating duplications in DNA
- B. The flipping of a segment of DNA within a chromosome
- C. The movement of a gene sequence from one chromosome location to another**
- D. Loss of genetic material during cell division

Transposition in genetics specifically refers to the movement of a gene sequence from one location in the genome to another, which is correctly identified in the answer choice. This process can involve the relocation of transposable elements, also known as "jumping genes," which can insert themselves into various locations within the genome, potentially leading to changes in gene expression and contributing to genetic diversity. The mechanism of transposition can be instrumental in processes such as evolution and adaptation, as it can facilitate genetic rearrangements that may provide new functions or regulatory capabilities to organisms. Understanding transposition is crucial in fields like molecular biology and genetics, particularly when studying genomic stability, mutation rates, and the role of mobile genetic elements. While the other choices describe different genetic phenomena, they do not accurately capture the definition of transposition. For instance, duplications of DNA involve increasing the number of copies of a segment rather than moving it, flipping segments refers to an inversion that does not involve relocation, and loss of genetic material pertains to deletions, which is unrelated to the movement or rearrangement of genetic sequences.

4. Which structure allows a host cell to absorb endosymbionts?

- A. Cell wall
- B. Plasma membrane**
- C. Nucleus
- D. Ribosomes

The plasma membrane is the correct answer because it is the semi-permeable barrier that surrounds the cell and regulates the movement of substances in and out of the cell. This membrane plays a crucial role in the process of endocytosis, where the cell engulfs external materials—including potential endosymbionts—by folding inwards and forming a vesicle that brings those materials into the cell. The fluid nature of the plasma membrane facilitates this process, allowing the host cell to absorb a variety of substances, including other organisms or their components. In contrast, the cell wall, while providing structural support and protection, is generally present in plant and fungal cells and does not play an active role in the absorption of endosymbionts. The nucleus, being the control center of the cell housing genetic material, does not directly participate in the absorption of external organisms. Ribosomes are responsible for protein synthesis and do not have any role in the uptake of endosymbionts. Thus, the plasma membrane is the essential structure enabling a host cell to absorb entities from its environment effectively.

5. During which phase of respiration does the diaphragm contract and move down?

- A. Expiration**
- B. Inspiration**
- C. External respiration**
- D. Internal respiration**

The phase of respiration in which the diaphragm contracts and moves downward is inspiration. During this process, the diaphragm, a dome-shaped muscle located below the lungs, contracts and flattens. This contraction increases the volume of the thoracic cavity, causing a decrease in the internal pressure relative to the atmospheric pressure outside the body. As a result, air flows into the lungs. The movement of the diaphragm is essential for the inhalation of air, allowing oxygen to enter the respiratory system for gas exchange. In the context of respiration, expiration refers to the release of air from the lungs, during which the diaphragm relaxes and moves back to its original position. External respiration involves the exchange of gases between the atmosphere and the blood in the lungs. Internal respiration, on the other hand, refers to the exchange of gases between the bloodstream and the body tissues. While all these processes contribute to respiration, it is specifically during inspiration that the diaphragm's contraction and downward movement occur.

6. During which phase of the cell cycle does the cell duplicate its contents except for chromosomes?

- A. G1 phase**
- B. G2 phase**
- C. S phase**
- D. G0 phase**

The G1 phase, or the first gap phase of the cell cycle, is characterized by the growth and preparation of the cell for DNA replication. During this phase, the cell increases in size and synthesizes various proteins and organelles that are necessary for the next phase, which is the synthesis phase (S phase) where the actual duplication of the chromosomes occurs. It is during G1 that the cell ensures it has enough resources and energy to duplicate its contents effectively. This phase sets the stage for successful DNA synthesis by providing the necessary foundation. In contrast, the S phase is specifically when DNA is replicated, marking the duplication of chromosomes. The G2 phase follows S and involves further preparation for mitosis, including the duplication of certain organelles and additional synthesis, but it is not primarily focused on contents other than the chromosomes. The G0 phase represents a quiescent state where cells are metabolically active but not actively dividing, and thus does not involve content duplication as G1 does.

7. What occurs when habitat loss and pollution impact species in a specific region?

- A. Species migration**
- B. Extirpation**
- C. Habitat restoration**
- D. Populational recovery**

When habitat loss and pollution impact species in a specific region, extirpation refers to the local extinction of a species from a particular area, even though the species may continue to exist elsewhere. This phenomenon occurs when an environmental change—such as loss of habitat or degradation from pollution—renders the conditions necessary for survival within that local ecosystem inadequate. As a result, species may no longer be able to thrive or reproduce effectively in that specific location, leading to their eventual disappearance from that area. This concept highlights the severe implications of environmental distress on biodiversity and the stability of ecosystems. The other options present scenarios that do not directly relate to the immediate consequences of habitat loss and pollution. For instance, species migration involves relocating to more favorable habitats and does not signify extinction. Habitat restoration refers to efforts aimed at repairing damage but does not occur as a direct effect of habitat loss and pollution; it's a subsequent action taken to improve conditions. Lastly, populational recovery pertains to the rebound of a species' numbers after a decline, which is unlikely in the scenario of localized extinction caused by the detrimental effects of habitat loss and pollution.

8. Which of the following best describes polysaccharides?

- A. Composed of fatty acids**
- B. Made of multiple amino acids**
- C. Long chains of simple sugars**
- D. Soluble in water**

Polysaccharides are best described as long chains of simple sugars. These complex carbohydrates are formed by the combination of multiple monosaccharides, which are the simplest forms of carbohydrates. The structure of polysaccharides allows them to serve various functions in organisms, including energy storage and providing structural support. For example, starch and glycogen are polysaccharides that serve as energy storage molecules, while cellulose is a polysaccharide that provides structural integrity to plant cell walls. The long chains give them unique properties, such as being able to form gel-like substances and having different solubility characteristics depending on their structure and composition. The fact that polysaccharides are not composed of fatty acids, as is the case with lipids, or made of amino acids, which are the building blocks of proteins, clarifies their distinct classification as carbohydrates. Although some polysaccharides may have limited solubility in water, generally, they are not characterized primarily by their solubility but rather by their composition and structure.

9. What characterizes the telophase of mitosis?

- A. Centrosome becomes more defined
- B. Chromosomes uncoil and nuclear membrane reforms**
- C. Chromatids line up along the equatorial plate
- D. Sister chromatids separate

During telophase of mitosis, the key processes that occur include the uncoiling of chromosomes and the reformation of the nuclear membrane. At this stage, the chromosomes, which have been tightly condensed during previous phases, begin to decondense back into a more relaxed state, allowing for their genetic material to be accessible for transcription and replication during the interphase that follows.

Additionally, as the chromosomes unwind, the nuclear membrane reforms around each set of chromosomes, creating two distinct nuclei within the dividing cell. This is crucial for cell division, as it ensures that each daughter cell will receive the correct genetic material. The other processes do not occur during telophase. For example, while the centrosome's definition and the alignment of chromatids are important in earlier phases of mitosis (such as prophase and metaphase), they are not characteristic of telophase. Similarly, sister chromatids separate during anaphase, not telophase, marking the transition of the chromatids moving to opposite poles of the cell. Thus, the emphasis on the uncoiling of chromosomes and the reformation of the nuclear membrane distinctly characterizes telophase.

10. What does the term inversion refer to in genetics?

- A. Insertion of additional genetic material into the chromosome
- B. Flipping and reinsertion of a chromosome segment backwards**
- C. Cutting and relocating a segment of DNA to another chromosome
- D. Repeating a segment of DNA within the same chromosome

In genetics, the term inversion specifically refers to a rearrangement in the structure of a chromosome in which a segment of the chromosome is flipped and then reintegrated in the opposite orientation. This alteration can occur when a single chromosome breaks in two places, and the middle section is reversed before rejoining with the ends. This structural change can have significant implications for genes located within the inverted segment by altering their expression or function. Inversions do not involve the addition of genetic material (which would be an insertion), nor do they pertain to the relocation of segments between different chromosomes (translocation) or the duplication of sections of DNA (duplication). Thus, the option representing the flipping and reinsertion of a chromosome segment backwards accurately captures the definition and nature of genetic inversion.

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://cnihentrance.examzify.com>

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

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