

National League for Nursing (NLN) Science Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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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. In Chemistry, what fundamental concepts are essential for the NLN Science Practice Exam?**
 - A. Basic chemical principles, including the periodic table, chemical reactions, and solution properties**
 - B. Organic chemistry and its applications**
 - C. Hazardous material handling in a laboratory**
 - D. Advanced chemical engineering topics**
- 2. What type of questions can be expected in the Biology section of the NLN exam?**
 - A. Questions about historical figures in biology**
 - B. Questions about cellular processes, genetics, and human anatomy**
 - C. Questions regarding environmental issues**
 - D. Questions focusing on plant biology only**
- 3. In gene expression, what is the role of mRNA?**
 - A. To transport nutrients across the cell membrane**
 - B. To store genetic information**
 - C. To direct protein synthesis from DNA**
 - D. To facilitate cell division**
- 4. Carbohydrates and starches must be changed to what substance to be used by cells?**
 - A. glucose**
 - B. glycerin**
 - C. sucrose**
 - D. fructose**
- 5. Which type of molecule do antioxidants primarily neutralize?**
 - A. Vitamins**
 - B. Proteins**
 - C. Free radicals**
 - D. Minerals**

6. During stress, which of the following best describes cortisol's effect?

- A. It promotes excessive immune response**
- B. It decreases glucose levels**
- C. It helps manage stress by influencing metabolism**
- D. It has no physiological role**

7. What does the term 'half-life' refer to in pharmacology?

- A. The maximum effectiveness of a drug**
- B. The duration a drug remains active in the body**
- C. The time required for a drug concentration to reduce by half**
- D. The elimination timeline of a drug**

8. What are isotopes and why are they significant in medicine?

- A. They are identical elements used in energy production**
- B. They are different neutrons of elements used in medical imaging and treatments**
- C. They are toxic substances eliminated by the kidneys**
- D. They are singular compounds used in digestion**

9. What nutrient does the blood-brain barrier allow to pass through?

- A. Fats**
- B. Oxygen**
- C. Glucose**
- D. Proteins**

10. Which type of fat is generally considered heart-healthy?

- A. Saturated fats**
- B. Trans fats**
- C. Unsaturated fats**
- D. Cholesterol**

Answers

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

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Explanations

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1. In Chemistry, what fundamental concepts are essential for the NLN Science Practice Exam?

- A. Basic chemical principles, including the periodic table, chemical reactions, and solution properties**
- B. Organic chemistry and its applications**
- C. Hazardous material handling in a laboratory**
- D. Advanced chemical engineering topics**

The selection emphasizing basic chemical principles is paramount for the NLN Science Practice Exam, as it forms the foundational knowledge necessary for understanding chemistry in a healthcare context. Familiarity with the periodic table equips students with the ability to recognize elemental properties and trends, which is crucial for predicting chemical behavior and interactions in biological systems. Understanding chemical reactions is vital as it encompasses the principles of how substances interact, which is directly related to drug mechanisms and metabolic processes in nursing practice. Moreover, comprehension of solution properties is essential because many physiological processes occur in aqueous environments, and an understanding of solubility, concentration, and pH can influence clinical decision-making. These basic principles serve as the building blocks for more complex concepts, enabling students and future healthcare professionals to integrate their knowledge effectively in both clinical and laboratory settings. The other choices, while important in their own right, represent more specialized areas of chemistry that build upon the fundamental concepts. Organic chemistry, while significant, is often introduced after foundational principles are grasped, and hazardous material handling pertains more to safety protocols than core chemical understanding. Advanced chemical engineering topics exceed the requisite knowledge expected for nursing students, who need a firm grounding in basic chemistry to apply their understanding in healthcare settings.

2. What type of questions can be expected in the Biology section of the NLN exam?

- A. Questions about historical figures in biology**
- B. Questions about cellular processes, genetics, and human anatomy**
- C. Questions regarding environmental issues**
- D. Questions focusing on plant biology only**

The selection of questions about cellular processes, genetics, and human anatomy in the Biology section of the NLN exam is grounded in the fundamental principles of biological sciences that are crucial for nursing and healthcare practices. Understanding cellular processes is essential for comprehending how the body functions at a micro level, which directly impacts patient care. Genetics plays a critical role in understanding inherited conditions and diseases, influencing treatment decisions and health predictions. Knowledge of human anatomy forms the cornerstone of nursing, as it provides the necessary insights into the structure and function of the human body, crucial for effective diagnosis and treatment. While historical figures in biology, environmental issues, and plant biology are relevant topics in the broader field of biology, the NLN exam emphasizes content that is directly applicable to nursing practice. This focus ensures that examinees are well-prepared to address the biological aspects of patient health and healthcare systems, which are paramount in their future roles as health professionals.

3. In gene expression, what is the role of mRNA?

- A. To transport nutrients across the cell membrane**
- B. To store genetic information**
- C. To direct protein synthesis from DNA**
- D. To facilitate cell division**

In gene expression, mRNA, or messenger RNA, plays a crucial role in directing protein synthesis from DNA. This process begins when a specific gene is transcribed into mRNA in the nucleus. The mRNA then travels from the nucleus to the ribosomes in the cytoplasm, where it serves as a template for the assembly of amino acids into a polypeptide chain, ultimately forming a protein. The significance of mRNA lies in its ability to convey the information encoded in DNA to the ribosome, effectively translating the genetic code into functional proteins, which are essential for various cellular functions and processes. Each sequence of nucleotides in the mRNA corresponds to specific amino acids, following the genetic code established by the DNA. Other options describe different cellular functions that do not pertain to the role of mRNA. For instance, transporting nutrients across the cell membrane relates to membrane proteins, while storing genetic information directly pertains to DNA. Facilitating cell division is primarily the role of other cellular components such as centrioles and spindle fibers. Thus, directing protein synthesis is the distinct and critical function of mRNA in the process of gene expression.

4. Carbohydrates and starches must be changed to what substance to be used by cells?

- A. glucose**
- B. glycerin**
- C. sucrose**
- D. fructose**

Carbohydrates and starches are complex carbohydrates that the body cannot use directly in their original form. They must be broken down into simpler forms, particularly glucose, to be utilized effectively by cells for energy. The process of digestion involves enzymes that convert starches into glucose molecules. Once carbohydrates are reduced to glucose, they can enter the bloodstream and be transported to cells where they undergo cellular respiration to produce energy. Glucose is crucial as it serves as the primary energy source for the body's cells, particularly for neurons and red blood cells, which rely heavily on glucose for their metabolic needs. While other options may represent different types of sugars or compounds, they do not directly serve as the primary form of carbohydrate that cells can utilize for energy. This makes glucose the essential and correct answer for the question posed.

5. Which type of molecule do antioxidants primarily neutralize?

- A. Vitamins**
- B. Proteins**
- C. Free radicals**
- D. Minerals**

Antioxidants primarily neutralize free radicals, which are highly reactive molecules that can cause oxidative stress in the body. Free radicals are unstable due to an unpaired electron in their outer shell, leading them to seek stability by stealing electrons from other molecules. This process can damage cellular components, including DNA, lipids, and proteins, contributing to various diseases and aging. Antioxidants work by donating an electron to free radicals without becoming unstable themselves, effectively neutralizing them and preventing potential damage. For instance, common dietary antioxidants include vitamins C and E, which help protect cells by neutralizing free radicals. The other types of molecules listed—vitamins, proteins, and minerals—play different roles in the body. While some vitamins have antioxidant properties, they are not the primary target of antioxidants. Proteins perform a vast array of functions, including enzymatic activity and structural roles, but are not specifically neutralized by antioxidants. Minerals, while essential for various body functions and some acting as co-factors in antioxidant enzymes, do not directly relate to the neutralization process in the same way free radicals do.

6. During stress, which of the following best describes cortisol's effect?

- A. It promotes excessive immune response**
- B. It decreases glucose levels**
- C. It helps manage stress by influencing metabolism**
- D. It has no physiological role**

Cortisol plays a critical role in the body's response to stress, which is primarily related to its influence on metabolism. During stressful situations, cortisol acts to increase energy availability by ensuring that glucose and fatty acids are readily accessible for use by the body. This hormone stimulates gluconeogenesis, the process where glucose is produced from non-carbohydrate sources, leading to an increase in blood sugar levels. Additionally, cortisol facilitates the breakdown of fats and proteins to provide energy. These metabolic adjustments are essential for helping the body manage stress conditions, making it vital for short-term stress response and maintaining homeostasis. The other options do not accurately capture cortisol's role during stress. For instance, while cortisol affects immune function, it does so by modulating and, in some cases, suppressing excessive immune responses rather than promoting them. Additionally, cortisol does not decrease glucose levels; instead, it is known for increasing them to ensure that there is enough energy available during times of stress. Lastly, cortisol certainly has a physiological role, as it is instrumental in the stress response and other bodily functions, so the notion that it has no role is incorrect.

7. What does the term 'half-life' refer to in pharmacology?

- A. The maximum effectiveness of a drug
- B. The duration a drug remains active in the body
- C. The time required for a drug concentration to reduce by half**
- D. The elimination timeline of a drug

The term 'half-life' in pharmacology specifically refers to the time required for the concentration of a drug in the bloodstream to reduce by half. This measure is critical for understanding how long a drug remains active in the system and informs dosing intervals. By knowing the half-life of a medication, healthcare professionals can predict when the drug will reach steady-state levels, how frequently to administer doses, and when to anticipate the drug's effects diminishing. Understanding half-life is also essential for developing treatment regimens, as it impacts both efficacy and safety. It differs from concepts like the maximum effectiveness of a drug, the overall duration it remains active, or an expansive elimination timeline, which incorporate broader pharmacokinetic principles. Therefore, this specificity is what makes 'half-life' an essential term within pharmacology.

8. What are isotopes and why are they significant in medicine?

- A. They are identical elements used in energy production
- B. They are different neutrons of elements used in medical imaging and treatments**
- C. They are toxic substances eliminated by the kidneys
- D. They are singular compounds used in digestion

Isotopes are variants of a particular chemical element that have the same number of protons but differ in the number of neutrons, resulting in a different atomic mass. This unique characteristic is significant in medicine, especially in the fields of medical imaging and treatment. For example, certain isotopes are used as tracers in imaging techniques like PET scans and in therapies such as radiation therapy for cancer treatment. The differing masses and nuclear properties allow for specific behaviors in biological systems, enabling doctors to track physiological processes or target cancer cells with precision. This understanding of isotopes and their applications illustrates their vital role in advancing medical technology and improving patient care.

9. What nutrient does the blood-brain barrier allow to pass through?

- A. Fats**
- B. Oxygen**
- C. Glucose**
- D. Proteins**

The blood-brain barrier (BBB) is a highly selective permeable barrier that protects the brain from potentially harmful substances in the bloodstream while allowing essential nutrients to pass through. Among these nutrients, glucose is particularly critical because it serves as the primary energy source for brain cells. Glucose cannot pass freely through the BBB due to its size and polarity, but specific transport mechanisms exist. The transporters responsible for glucose uptake are specialized proteins that facilitate its movement from the blood into the brain. This process is vital because, despite the brain representing only about 2% of a person's body weight, it consumes approximately 20% of the body's total glucose supply when at rest. In contrast, while oxygen is also essential for brain function, it passes through the BBB through simple diffusion, which means it can move freely without specific transport mechanisms. Fats and proteins, on the other hand, have much more restricted access; while some small fatty acids can cross, large proteins cannot easily traverse the barrier. Thus, glucose is a crucial nutrient that the BBB selectively transports, making it the correct answer.

10. Which type of fat is generally considered heart-healthy?

- A. Saturated fats**
- B. Trans fats**
- C. Unsaturated fats**
- D. Cholesterol**

Unsaturated fats are generally considered heart-healthy because they can help improve blood cholesterol levels, which in turn can reduce the risk of heart disease. These fats are typically found in plant-based oils, nuts, seeds, avocados, and fatty fish. Unsaturated fats are divided into monounsaturated and polyunsaturated fats, both of which are beneficial to cardiovascular health. Consuming these fats can help lower levels of harmful LDL cholesterol and increase beneficial HDL cholesterol, contributing to overall heart health. In contrast, saturated fats, which are commonly found in animal products such as red meat and full-fat dairy, can raise cholesterol levels and increase the risk of heart disease when consumed in excess. Trans fats, often found in processed foods, are known to be particularly harmful as they not only raise LDL cholesterol but also lower HDL cholesterol. Cholesterol itself, while essential for various bodily functions, is not categorized as a type of fat and its relationship with heart health is more complex, depending on the type of cholesterol. Thus, unsaturated fats stand out as the heart-healthy option among these choices.

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://science-nln.examzify.com>

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

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