

NATIONAL LEAGUE FOR NURSING (NLN) 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. What color would an organism containing chloroplasts most likely be?

- A. Orange
- B. Brown
- C. Yellow
- D. Green

2. What are the primary products of gene expression?

- A. Carbohydrates
- B. Proteins
- C. Lipids
- D. Nucleic acids

3. What does the concept of carrying capacity imply about species populations?

- A. It indicates how fast species can grow under ideal conditions
- B. It shows how many species can coexist peacefully
- C. It defines the maximum number of individuals a habitat can support sustainably
- D. It describes the number of predators required to control populations

4. Why are clinical trials crucial in the medical field?

- A. They offer only theoretical knowledge
- B. They validate the practical application of treatments
- C. They avoid all risks associated with new drugs
- D. They focus solely on animal testing

5. A transverse wave does not have:

- A. a compression.
- B. an amplitude.
- C. a frequency.
- D. a wavelength.

- 6. What is the primary source of energy for cellular processes?**
- A. Amino acids
 - B. Fatty acids
 - C. Glucose
 - D. Nucleotides
- 7. What metabolic functions does the liver perform?**
- A. Only detoxification of drugs
 - B. Metabolizes nutrients and produces proteins
 - C. Stores excess glucose only
 - D. Regulates blood pressure
- 8. What is the purpose of cellular respiration in cells?**
- A. To convert sunlight into energy
 - B. To convert glucose and oxygen into ATP
 - C. To synthesize proteins
 - D. To store genetic information
- 9. Which metabolic processes are essential for understanding energy transformations in human physiology?**
- A. Metabolism and diffusion.
 - B. Catabolism and anabolism.
 - C. Fermentation and respiration.
 - D. Photosynthesis and cellular respiration.
- 10. Which statement is true regarding the role of neurotransmitters?**
- A. They only affect motor skills
 - B. They influence mood and bodily functions
 - C. They are not involved in cognition
 - D. They are solely responsible for reflex actions

Answers

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

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Explanations

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1. What color would an organism containing chloroplasts most likely be?

- A. Orange
- B. Brown
- C. Yellow
- D. Green**

An organism containing chloroplasts would most likely be green because chloroplasts are the organelles responsible for photosynthesis in plants and some algae. These organelles contain pigments, the most prevalent of which is chlorophyll. Chlorophyll reflects green light while absorbing other wavelengths, particularly red and blue light. This selective absorption of light contributes to the green appearance of plants and organisms rich in chloroplasts. In contrast, options such as orange, brown, or yellow might represent other plant pigments, such as carotenoids or anthocyanins. These pigments can contribute to the coloration of plants but do not imply the presence of chloroplasts where photosynthesis occurs. This is why green is the most accurate answer when considering organisms specifically containing chloroplasts.

2. What are the primary products of gene expression?

- A. Carbohydrates
- B. Proteins**
- C. Lipids
- D. Nucleic acids

The primary products of gene expression are proteins. Gene expression refers to the process by which the information encoded in a gene is used to produce a functional product, typically a protein. This process involves two main steps: transcription and translation. During transcription, the DNA sequence of a gene is transcribed into messenger RNA (mRNA). Subsequently, during translation, the mRNA is read by ribosomes to synthesize polypeptide chains, which fold into functional proteins. Proteins serve a wide range of essential functions in the body, including structural roles, enzyme activity, signaling, immune responses, and much more. While other molecules such as carbohydrates, lipids, and nucleic acids are also critical for cellular function and structure, they are not the primary products directly synthesized through gene expression. Instead, they may play roles in metabolism or cellular architecture but are not produced as a direct outcome of the transcription and translation processes governed by genes.

3. What does the concept of carrying capacity imply about species populations?

- A. It indicates how fast species can grow under ideal conditions
- B. It shows how many species can coexist peacefully
- C. It defines the maximum number of individuals a habitat can support sustainably**
- D. It describes the number of predators required to control populations

The concept of carrying capacity is fundamental in understanding population dynamics within an ecosystem. It refers specifically to the maximum number of individuals of a particular species that a given habitat can support over time without causing environmental degradation. This means that when a population reaches its carrying capacity, the resources available—such as food, water, and shelter—are fully utilized, preventing further growth of the population. Carrying capacity is influenced by various factors including the availability of resources, environmental conditions, and interactions with other species. If a population exceeds its carrying capacity, it can lead to overpopulation, resulting in resource depletion, increased competition, and ultimately, a decline in the population as some individuals may not survive due to lack of resources. This understanding is crucial for conservation efforts, wildlife management, and predicting the impacts of human activity on natural ecosystems. It provides a framework for evaluating sustainable practices and ensuring that species populations can thrive within their environments without leading to ecological imbalance.

4. Why are clinical trials crucial in the medical field?

- A. They offer only theoretical knowledge
- B. They validate the practical application of treatments**
- C. They avoid all risks associated with new drugs
- D. They focus solely on animal testing

Clinical trials play a fundamental role in the medical field by validating the practical application of treatments. This process involves rigorous testing of new drugs, therapies, and medical devices directly in human participants, which allows researchers to gather vital data about their safety, efficacy, and overall impact on health. Through clinical trials, the medical community can assess how well a treatment works under real-world conditions and examine its effects across diverse populations. This evidence is critical for determining whether a new treatment should be approved for widespread use. Moreover, the findings from these trials contribute to the broader understanding of diseases and can lead to improvements in treatment protocols. While other aspects of drug development, such as theoretical knowledge, preclinical research, and animal testing, are essential, they do not replace the need for clinical trials. They provide foundational information but lack the real-world insights that only human trials can offer.

5. A transverse wave does not have:

- A. a compression.**
- B. an amplitude.
- C. a frequency.
- D. a wavelength.

A transverse wave is characterized by the movement of the medium in a direction perpendicular to the direction of the wave's propagation. This type of wave is commonly exemplified by waves on a string or electromagnetic waves. In the context of wave properties, a transverse wave does not exhibit compression, which is a feature typically associated with longitudinal waves. Longitudinal waves, such as sound waves, consist of areas of compression and rarefaction, where the particles of the medium move parallel to the direction of wave travel. In contrast, transverse waves have amplitude, frequency, and wavelength. Amplitude refers to the maximum displacement of the wave from its rest position, frequency indicates how many cycles occur in a given time frame, and wavelength is the distance between successive peaks or troughs of the wave. Thus, it's accurate to assert that the absence of compression is a defining characteristic of transverse waves, as their mechanics involve perpendicular motion rather than the parallel motion that produces compressions in longitudinal waves.

6. What is the primary source of energy for cellular processes?

- A. Amino acids
- B. Fatty acids
- C. Glucose**
- D. Nucleotides

Glucose is considered the primary source of energy for cellular processes because it is highly efficient and readily metabolized by cells through cellular respiration. During this process, glucose undergoes glycolysis, the Krebs cycle, and oxidative phosphorylation, leading to the production of adenosine triphosphate (ATP), which powers various cellular functions. Glucose is abundant and can be easily derived from dietary carbohydrates, making it a crucial energy substrate for cells, especially those in high-demand organs such as the brain and muscles. This preferential use of glucose reflects its role in maintaining proper physiological functions, particularly in energy-demanding situations. While amino acids, fatty acids, and nucleotides serve important roles in metabolism and cellular processes, they are typically utilized for other functions. Amino acids are primarily used for protein synthesis and can be converted to glucose via gluconeogenesis when needed. Fatty acids are mainly stored as triglycerides and contribute to energy production through beta-oxidation, but this process is less immediate compared to glucose metabolism. Nucleotides play critical roles in cellular signaling and the synthesis of nucleic acids but are not utilized as primary energy sources. Therefore, glucose stands out as the primary and most efficient energy source for cellular processes.

7. What metabolic functions does the liver perform?

- A. Only detoxification of drugs
- B. Metabolizes nutrients and produces proteins**
- C. Stores excess glucose only
- D. Regulates blood pressure

The liver performs a wide array of metabolic functions that are crucial for maintaining overall health and homeostasis. Among these, one of the primary roles is the metabolism of nutrients. The liver processes carbohydrates, proteins, and fats, converting them into energy and synthesizing vital proteins such as albumin and clotting factors. In addition to nutrient metabolism, the liver plays a critical role in detoxifying various substances, producing bile for digestion, and regulating blood glucose levels by storing excess glucose as glycogen and releasing it as needed to maintain normal blood sugar levels. It is also involved in the metabolism of hormones and drugs, contributing to the body's ability to respond to changes in the environment. While the liver does store excess glucose, it is not limited to this function alone; it has multiple roles encompassing a range of metabolic activities. Furthermore, regulating blood pressure is not a primary function of the liver; that role is more closely associated with other systems, such as the cardiovascular system. Therefore, identifying the liver's metabolic capabilities highlights its essential contribution to bodily functions, with the correct choice reflecting its comprehensive involvement in metabolism and protein production.

8. What is the purpose of cellular respiration in cells?

- A. To convert sunlight into energy
- B. To convert glucose and oxygen into ATP**
- C. To synthesize proteins
- D. To store genetic information

The purpose of cellular respiration in cells is to convert glucose and oxygen into ATP, which stands for adenosine triphosphate. ATP is often referred to as the energy currency of the cell because it provides the necessary energy for various cellular processes. During cellular respiration, glucose is broken down through a series of biochemical reactions that also utilize oxygen, resulting in the release of energy. This process occurs primarily in the mitochondria of the cells and involves three key stages: glycolysis, the Krebs cycle, and the electron transport chain. In glycolysis, glucose is converted into pyruvate, producing a small amount of ATP along with electron carriers. The pyruvate then enters the mitochondria, where it participates in the Krebs cycle, generating more electron carriers and releasing carbon dioxide as a byproduct. Finally, the electron transport chain uses these electron carriers to create a proton gradient that drives the production of a large amount of ATP. The other options refer to different biological processes. Converting sunlight into energy pertains to photosynthesis, which is characteristic of plants and some microorganisms. Synthesizing proteins involves transcription and translation processes related to gene expression rather than energy production. Storing genetic information is the primary function of DNA, which is essential for inheritance and

9. Which metabolic processes are essential for understanding energy transformations in human physiology?

- A. Metabolism and diffusion.
- B. Catabolism and anabolism.**
- C. Fermentation and respiration.
- D. Photosynthesis and cellular respiration.

The correct answer is grounded in the fundamental concepts of metabolism as it relates to energy transformations within the human body. Catabolism and anabolism are two crucial components of metabolism that help explain how energy is produced, stored, and utilized in biological systems. Catabolism refers to the breakdown of complex molecules into simpler ones, releasing energy in the process. This energy is often captured in the form of ATP (adenosine triphosphate), which cells use to fuel various biological activities. For instance, the catabolism of carbohydrates, fats, and proteins during cellular respiration leads to the release of energy stored in these nutrients. Anabolism, on the other hand, involves the synthesis of complex molecules from simpler ones, which requires an input of energy. This process is essential for growth, repair, and maintenance of cellular structures and functions, such as building proteins from amino acids or synthesizing nucleic acids during cell division. Together, catabolism and anabolism illustrate the dynamic nature of energy transformations in the body, highlighting how energy is released through the breakdown of nutrients and subsequently used for building cellular components and conducting vital processes. Understanding these processes provides insights into how the body maintains homeostasis, responds to physical demands, and manages energy balance. The other options lack the

10. Which statement is true regarding the role of neurotransmitters?

- A. They only affect motor skills
- B. They influence mood and bodily functions**
- C. They are not involved in cognition
- D. They are solely responsible for reflex actions

Neurotransmitters play a crucial role in the central nervous system by facilitating communication between neurons. They are chemical messengers that transmit signals across synapses, influencing a wide range of bodily functions and behaviors. The correct answer highlights that neurotransmitters significantly influence mood and various bodily functions. For instance, neurotransmitters such as serotonin are known to regulate mood and emotional responses, while others like dopamine are involved in reward and pleasure pathways. Additionally, neurotransmitters impact essential bodily functions, including sleep, digestion, and immune response. This diverse influence underscores the critical role these chemicals play beyond just motor skills. In contrast, the other statements limit the functions of neurotransmitters to specific areas, neglecting their broad influence on overall well-being and cognitive processes. Neurotransmitters are indeed involved in cognition, affecting memory, attention, and decision-making, which is overlooked in certain options. This comprehensive involvement illustrates how neurotransmitters are essential to a range of physiological and psychological processes, further validating the accuracy of the selected answer.

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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://science-nln.examzify.com>

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

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