

NLN PAX 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. Which temperature is defined as Absolute Zero?**
 - A. 0°C
 - B. 0 K
 - C. Positive 273°C
 - D. Negative 273 K
- 2. Which process occurs at a neuromuscular junction?**
 - A. Impulse transmission
 - B. Muscle contraction
 - C. Oxygen diffusion
 - D. Protein synthesis
- 3. A particle of light energy is called a:**
 - A. Positron
 - B. Neutron
 - C. Betatron
 - D. Photon
- 4. In an experiment comparing a treatment group to a water-injected group, the group receiving water serves as**
 - A. A control group
 - B. An experimental group
 - C. A test group
 - D. An exercise group
- 5. The second law of thermodynamics states that in every spontaneous process, the entropy of the universe**
 - A. decreases
 - B. remains constant
 - C. fluctuates
 - D. increases

- 6. Which is the most complex level of organization in a frog?**
- A. Stomach
 - B. Epithelium
 - C. Respiratory system
 - D. Striated muscle
- 7. Which of these conditions is associated with smoking?**
- A. Esophageal varices.
 - B. Tonsillitis.
 - C. Emphysema.
 - D. Blindness.
- 8. Which diagnostic tool records brain electrical activity?**
- A. Electroencephalogram
 - B. Otoscope
 - C. Electrocardiogram
 - D. Sphygmomanometer
- 9. Reducing the use of aerosol cans has contributed to a decrease of which environmental issue?**
- A. Global warming
 - B. Water pollution
 - C. Ozone layer destruction
 - D. Deforestation
- 10. If a solution turns blue with litmus paper, what color does it turn with phenolphthalein?**
- A. colorless
 - B. green
 - C. pink
 - D. yellow

Answers

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

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Explanations

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1. Which temperature is defined as Absolute Zero?

- A. 0°C
- B. 0 K**
- C. Positive 273°C
- D. Negative 273 K

Absolute zero is the lowest possible temperature, where molecular motion becomes minimal. On the Kelvin scale this is 0 kelvin. Because Kelvin and Celsius are linked by $K = C + 273.15$, 0 kelvin equals about -273.15°C. So 0°C is not absolute zero; it is 273.15 degrees warmer than it. The other options aren't correct: a temperature of 273°C is very hot, and negative 273 kelvin isn't a valid temperature on the Kelvin scale. In practice, scientists can approach absolute zero very closely but cannot reach it exactly.

2. Which process occurs at a neuromuscular junction?

- A. Impulse transmission**
- B. Muscle contraction
- C. Oxygen diffusion
- D. Protein synthesis

The key event at a neuromuscular junction is the transmission of the nerve impulse to the muscle. When a motor neuron fires, it releases acetylcholine into the synaptic cleft. This neurotransmitter binds to receptors on the muscle cell membrane, causing ions to flow and the muscle cell to depolarize, which starts the muscle's own electrical signal. This sequence converts a neural impulse into a chemical signal and then into a muscle response, allowing contraction to begin. Oxygen diffusion is a general tissue process, protein synthesis occurs inside cells to build proteins, and muscle contraction happens after the impulse is transmitted and the muscle is activated.

3. A particle of light energy is called a:

- A. Positron
- B. Neutron
- C. Betatron
- D. Photon**

Light energy is carried in indivisible units called photons. A photon is the fundamental quantum of electromagnetic radiation, with energy proportional to its frequency ($E = hf$) and traveling at the speed of light, while having no rest mass. The other terms refer to different things: a positron is the antimatter partner of the electron, a neutron is a nucleon in the nucleus, and a betatron is a device used to accelerate particles. So the particle of light energy is a photon.

4. In an experiment comparing a treatment group to a water-injected group, the group receiving water serves as

- A. A control group
- B. An experimental group
- C. A test group
- D. An exercise group

The main idea is using a baseline to see what the treatment actually changes. The water-injected group serves as a control because it undergoes the same procedure as the treatment group but doesn't receive the active intervention. This creates a neutral comparison point, so any differences observed can be attributed to the treatment itself rather than to the injection process, handling, or other variables. The group that gets the treatment is the experimental condition, not the control. So the water-injected group is the control group, used to gauge the true effect of the treatment.

5. The second law of thermodynamics states that in every spontaneous process, the entropy of the universe

- A. decreases
- B. remains constant
- C. fluctuates
- D. increases

The essential idea is that spontaneous processes drive energy to spread out and become more accessible in more ways. Entropy measures how many microscopic configurations are possible for a given state. When a process happens on its own, the system and its surroundings tend to move toward more probable arrangements, so the total number of possible configurations increases. That means the entropy of the universe (the system plus surroundings) increases for spontaneous changes. If a process were perfectly reversible, the total entropy would stay the same; if a process reduced entropy, it wouldn't be spontaneous unless external work or constraints were used to impose order elsewhere. A classic example is a gas expanding freely into a vacuum—the gas disperses, creating many more microstates and raising the universe's entropy. So, the correct statement is that the entropy of the universe increases.

6. Which is the most complex level of organization in a frog?

- A. Stomach
- B. Epithelium
- C. Respiratory system
- D. Striated muscle

In biology, organization builds from cells to tissues to organs to organ systems. The respiratory system in a frog is an organ system because it combines multiple organs and tissues that work together to exchange gases and support metabolism. Frogs breathe through both lungs and the skin, so this system includes lung tissue, skin tissue, muscles to ventilate the lungs, and the connections to the circulatory system that carry oxygen and carbon dioxide throughout the body. That level of integration across several structures and functions is more complex than a single organ like the stomach, a single tissue type like epithelium, or a single tissue type like striated muscle.

7. Which of these conditions is associated with smoking?

- A. Esophageal varices.
- B. Tonsillitis.
- C. Emphysema.**
- D. Blindness.

Smoking damages the lungs in a way that leads to emphysema, a form of COPD where the walls between air sacs are destroyed. This destruction reduces the surface area available for gas exchange and makes the lungs less elastic, so air gets trapped and breathing becomes increasingly difficult, especially with chronic exposure to tobacco smoke. The damage happens because immune cells in the lungs release enzymes that break down elastic tissue, and the oxidative stress from smoke overwhelms the lungs' defenses. That classic lung damage from long-term smoking is why emphysema is the condition most strongly associated with smoking. Esophageal varices arise from high pressure in the portal vein usually due to liver disease, not smoking. Tonsillitis is an infection of the tonsils. Blindness can stem from several eye diseases; while smoking can increase risk for some eye conditions, the straightforward link in common medical knowledge is emphysema with smoking.

8. Which diagnostic tool records brain electrical activity?

- A. Electroencephalogram**
- B. Otoscope
- C. Electrocardiogram
- D. Sphygmomanometer

Recording brain electrical activity is done with an electroencephalogram, which uses electrodes placed on the scalp to detect the small voltage changes produced by neuronal firing. These signals reflect different brain states and rhythms, helping identify things like seizures, sleep disorders, or brain injuries. The other tools measure other parts of the body: an otoscope examines the ear, an electrocardiogram records the heart's electrical activity, and a sphygmomanometer measures blood pressure.

9. Reducing the use of aerosol cans has contributed to a decrease of which environmental issue?

- A. Global warming
- B. Water pollution
- C. Ozone layer destruction**
- D. Deforestation

Reducing aerosol cans targets ozone layer destruction. Traditional aerosol propellants included chlorofluorocarbons that rise to the stratosphere and release chlorine and bromine radicals, which break apart ozone molecules. Using fewer aerosols means fewer of these ozone-depleting substances reach that layer, slowing ozone loss and allowing the ozone layer to recover over time. Global warming comes mainly from greenhouse gases like CO₂, water pollution from contaminants in water, and deforestation from clearing forests, so those issues aren't directly tied to aerosol use in the same way. Modern propellants are designed to avoid ozone depletion, but the key improvement linked to reducing aerosol cans is less damage to the ozone layer.

10. If a solution turns blue with litmus paper, what color does it turn with phenolphthalein?

A. colorless

B. green

C. pink

D. yellow

The main idea is how pH indicators behave. Litmus turning blue means the solution is basic (alkaline). Phenolphthalein responds to that same basic environment by turning pink (it remains colorless in acidic or neutral solutions and shifts to pink in basic ones, typically above pH ~8.2). So, a basic solution will make phenolphthalein pink. Colors like colorless, yellow, or green would not match the basic conditions in this indicator, so pink is the correct result.

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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://nlnpaxscience.examzify.com>

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

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