NLN PAX 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

1. **During exercise, a person's respiratory rate increases due to**

   A. A decrease in CO_2 concentration in the blood

   B. An increase in O_2 concentration in the blood

   C. A decrease in pH

   D. An increase in CO_2 concentration in the blood

2. **At electrochemical equilibrium in a chemical cell, the cell potential is what value?**

   A. 1v

   B. between 0 and 1v

   C. 0v

   D. greater than 1v

3. **In a controlled experiment where one group receives the drug dissolved in water and a second group receives water alone, the second group serves as a**

   A. Group A

   B. Group B

   C. Both groups

   D. Control group

4. **One possible reason that animals such as mice, moles, and rabbits have such rapid rates of reproduction is that they**

   A. Serve as prey for many other animals

   B. Herbivorous

   C. Live together in burrows

   D. Are predators

5. **The number of complete waves passing a fixed point each second is known as which quantity?**

   A. Frequency

   B. Wavelength

   C. Amplitude

   D. Speed

6. Which principle explains the magician's tablecloth trick where the dishes remain undisturbed?

- **A. Gravitational force depends directly on mass**
- **B. Objects at rest tend to remain at rest**
- **C. Force equals mass times acceleration**
- **D. An object traveling at constant velocity has no net force on it**

7. During fasting, which storage carbohydrate is used by the liver to supply glucose?

- **A. Triglycerides**
- **B. Cholesterol**
- **C. Protein**
- **D. Glycogen**

8. In nocturnal mammals, which photoreceptor type is more abundant?

- **A. More cones than rods**
- **B. More rods than cones**
- **C. Equal numbers**
- **D. No rods exist**

9. An immediate remedy for a person who is choking on food is to

- **A. Have her bend forward and tell her to cough**
- **B. Insert a finger or blunt object toward the back of the mouth**
- **C. Apply quick, hard pressures successively to the abdomen, just beneath the diaphragm**
- **D. Phone emergency for help**

10. Iodized salt is used to prevent a human condition known as

- **A. Scurvy**
- **B. Anemia**
- **C. Goiter**
- **D. Rickets**

Answers

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

Explanations

1. During exercise, a person's respiratory rate increases due to

A. A decrease in CO_2 concentration in the blood

B. An increase in O_2 concentration in the blood

C. A decrease in pH

D. An increase in CO_2 concentration in the blood

When you exercise, your cells produce more carbon dioxide as a waste product. This CO_2 combines with water in the blood to form carbonic acid, which releases hydrogen ions and lowers blood pH. Chemoreceptors in the brainstem and in the carotid bodies detect the higher CO_2 and the resulting drop in pH, signaling the respiratory center to increase the rate and depth of breathing. The goal is to expel CO_2 and restore pH balance, so ventilation rises in response to the increased CO_2 concentration. Oxygen levels don't typically drive this response as strongly, since oxygen is usually still adequate during exercise; the primary trigger is the rise in CO_2 (and the associated acidification) in the blood.

2. At electrochemical equilibrium in a chemical cell, the cell potential is what value?

A. 1v

B. between 0 and 1v

C. 0v

D. greater than 1v

When a redox reaction in a cell reaches equilibrium, there is no net tendency for electrons to flow between the electrodes. The driving force for the reaction is zero. The link between Gibbs free energy and cell potential, $\Delta G = -nF E_{cell}$, means that at equilibrium $\Delta G = 0$, so the cell potential must be $E_{cell} = 0$. In other words, once the system has balanced, no electrical work is available from the reaction, giving a cell potential of zero volts.

3. In a controlled experiment where one group receives the drug dissolved in water and a second group receives water alone, the second group serves as a

A. Group A

B. Group B

C. Both groups

D. Control group

The key idea here is using a baseline to isolate the effect of a treatment. In this setup, the group that receives only water serves as a control because they experience everything except the active drug. This makes them a baseline for comparison, so any differences observed between the two groups can be attributed to the drug itself rather than to placebo effects, random variation, or other factors. By comparing outcomes from the drug group to this control group, researchers can determine whether the drug truly has an effect.

4. One possible reason that animals such as mice, moles, and rabbits have such rapid rates of reproduction is that they

A. Serve as prey for many other animals

B. Herbivorous

C. Live together in burrows

D. Are predators

The main idea is that these animals face high mortality because they are common prey for many predators, so natural selection favors reproducing rapidly to keep the population going. When predation risk is high, maturing early and producing many offspring in quick succession increases the chances that enough young survive to adulthood. Traits like short generation times and large litter sizes are typical of this strategy, allowing rapid population turnover even if many offspring don't survive. The other characteristics—being herbivorous, living in burrows, or being predators—don't by themselves explain why such rapid reproduction is favored. Herbivory or burrowing can influence diet or habitat, but they don't inherently require high reproductive output. Being a predator isn't the driver here, since these animals are primarily preyed upon, not top predators.

5. The number of complete waves passing a fixed point each second is known as which quantity?

A. Frequency

B. Wavelength

C. Amplitude

D. Speed

Frequency is the rate at which complete wave cycles pass a fixed point per unit time. It tells you how many waves occur each second and is measured in hertz. In this scenario, counting how many full waves pass the point every second gives you the frequency directly. Wavelength is the spatial distance between successive crests, not how often they pass per second. Amplitude describes the height of the wave, not its rate. Speed is how fast the wave travels; in a given medium, speed equals frequency times wavelength, linking these properties but not defining them. If five waves pass each second, the frequency is five hertz.

6. Which principle explains the magician's tablecloth trick where the dishes remain undisturbed?

A. Gravitational force depends directly on mass

B. Objects at rest tend to remain at rest

C. Force equals mass times acceleration

D. An object traveling at constant velocity has no net force on it

Inertia is the key idea: objects at rest tend to stay at rest unless a net external force acts on them. When the tablecloth is snapped away, the horizontal force on each dish is brief and not large enough to overcome the dish's resistance to a change in motion. Because of this inertia, the dishes tend to maintain their initial state, so they stay essentially in place while the cloth moves out from underneath. Friction between the cloth and dishes may help a bit, but the main effect is that the dishes resist the sudden acceleration, making the trick look like the dishes remained undisturbed. The other statements describe forces and motions that don't directly capture why the dishes don't follow the cloth.

7. During fasting, which storage carbohydrate is used by the liver to supply glucose?

A. Triglycerides

B. Cholesterol

C. Protein

D. Glycogen

During fasting, the liver maintains blood glucose by breaking down a stored carbohydrate called glycogen. This process, glycogenolysis, uses the enzyme glycogen phosphorylase to remove glucose units as glucose-1-phosphate, which is converted to glucose-6-phosphate and then released as free glucose into the bloodstream by glucose-6-phosphatase. This rapid source of glucose comes from glycogen, the storage form of carbohydrate in the liver. The other options are not storage carbohydrates: triglycerides are fats stored in adipose tissue and yield fatty acids for energy rather than glucose; cholesterol is a lipid used for membranes and steroid synthesis; protein can supply amino acids for gluconeogenesis, but that's not a carbohydrate store and occurs later in fasting when glycogen is depleted.

8. In nocturnal mammals, which photoreceptor type is more abundant?

A. More cones than rods

B. More rods than cones

C. Equal numbers

D. No rods exist

Rod-dominant retinas optimize vision in low light. Rods are extremely sensitive to small amounts of light and can detect single photons, which helps nocturnal mammals see in dim conditions. Cones, on the other hand, require brighter light and provide color vision and fine detail, which isn't as useful at night. As a result, nocturnal species have many more rods than cones, boosting night-time sensitivity even though color and sharpness are sacrificed. If there were more cones or equal numbers, night vision would be poorer; having no rods would leave the animal unable to detect faint light at all.

9. An immediate remedy for a person who is choking on food is to

A. Have her bend forward and tell her to cough

B. Insert a finger or blunt object toward the back of the mouth

C. Apply quick, hard pressures successively to the abdomen, just beneath the diaphragm

D. Phone emergency for help

When someone is choking and can't breathe, the quickest fix is to create a strong pressure that can pop the object out of the airway. Abdominal thrusts accomplish this by delivering quick, upward pushes just above the navel. Those thrusts dramatically increase the pressure inside the chest, driving air through the airway and often expelling the blockage. Other options aren't as effective in a real choking emergency. Forcing a finger or blunt object into the mouth can push the object deeper or cause injury. Telling someone to bend forward and cough only helps if they can actually cough and move air; in a true obstruction, coughing isn't enough. While calling for help is important, it doesn't clear the airway by itself, so the immediate action to relieve the blockage is abdominal thrusts. If the person becomes unresponsive, begin appropriate rescue actions (like CPR) and call for emergency assistance.

10. Iodized salt is used to prevent a human condition known as

A. Scurvy

B. Anemia

C. Goiter

D. Rickets

Iodine is needed to make thyroid hormones. When the body doesn't get enough iodine, the thyroid gland increases its activity and often enlarges, causing a goiter. Adding iodine to salt provides a reliable source of this nutrient, helping maintain normal thyroid function and preventing the gland from swelling. Other conditions listed come from different nutrient deficiencies: scurvy is due to lack of vitamin C, anemia is commonly from insufficient iron or other factors, and rickets arises from vitamin D deficiency.

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!