NLN NEX Chemistry Practice Test (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. A statement about catalysts and activation energy is true.

A. They increase the activation energy

B. They lower the activation energy

C. They have no effect on the activation energy

D. They always change the final products

2. What is the smallest unit of an element?

A. Electron

B. Proton

C. Atom

D. Orbital

3. Which type of change involves no new substances being formed, only rearrangement of atoms and molecules?

A. Physical Changes

B. Chemical Changes

C. Phase Changes

D. Nuclear Changes

4. Temperature and pressure affect solubility. Which statement is correct?

A. Agitation and surface area affect solubility

B. Pressure alone affects solubility

C. Solubility is independent of temperature and pressure

D. Temperature and pressure affect solubility

5. A mixture is best described as which of the following?

A. A pure substance with fixed composition

B. A substance containing only one element

C. A compound formed by chemical bonding

D. A combination of two or more substances that are not chemically combined

6. The smallest building block of matter that defines an element's identity is called what?

A. Element

B. Proton

C. Neutron

D. Atom

7. Cathode rays originate from which particles?

A. Protons

B. Electrons

C. Neutrons

D. Photons

8. Strong acids ionize completely in water. Which statement is true?

A. Ionize completely in water

B. Ionize incompletely in water

C. Do not ionize at all

D. Only ionize at high temperatures

9. A more concentrated solution means more solute is dissolved. Which option best expresses this idea?

A. Less solute is dissolved

B. More solute is dissolved

C. Solute is completely insoluble

D. Solute remains as a separate phase

10. Which statement correctly distinguishes suspensions from solutions?

A. Suspensions are uniform at all scales; solutions are not.

B. Suspensions have smaller particle sizes than solutions.

C. Suspensions have components that settle over time; solutions do not.

D. Suspensions are always transparent; solutions are never.

Answers

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

Explanations

1. A statement about catalysts and activation energy is true.

A. They increase the activation energy

B. They lower the activation energy

C. They have no effect on the activation energy

D. They always change the final products

A catalyst speeds up a reaction by providing an alternative pathway with a lower activation energy. Activation energy is the energy barrier that reactants must overcome to reach the transition state and form products. By offering a gentler route, more particles have enough energy to react at a given temperature, so the rate increases without changing the overall energy of the system. The catalyst is not consumed, and the final products remain the same for the same overall reaction, so it doesn't alter what is produced. That's why lowering the activation energy is the correct statement.

2. What is the smallest unit of an element?

A. Electron

B. Proton

C. Atom

D. Orbital

An element's identity is defined by the atom—the basic unit that retains the element's chemical properties. The atom consists of a nucleus of protons and neutrons and surrounding electrons. Subatomic particles on their own, like electrons or protons, are components of the atom, not the unit that defines the element. An orbital is just a region in space describing where an electron is likely to be found, not a discrete unit. So the smallest unit that still represents the element and its chemistry is the atom.

3. Which type of change involves no new substances being formed, only rearrangement of atoms and molecules?

A. Physical Changes

B. Chemical Changes

C. Phase Changes

D. Nuclear Changes

The concept here is that if no new substance is formed, you're looking at a physical change. In a physical change, the material's identity stays the same—its molecules aren't bonded together to form something new, they might just rearrange or shift state. Ice melting into water is a prime example: the same H2O molecules, just in a liquid form, so no new substance appears. Phase changes—solid, liquid, gas—are all physical changes because they involve changes in state, not in chemical composition. By contrast, chemical changes create new substances by breaking and forming bonds, and nuclear changes involve changes in the nucleus itself. So the situation described fits physical change.

4. Temperature and pressure affect solubility. Which statement is correct?

A. Agitation and surface area affect solubility

B. Pressure alone affects solubility

C. Solubility is independent of temperature and pressure

D. Temperature and pressure affect solubility

Solubility depends on both temperature and pressure because they change the balance of interactions that hold the solute and solvent together. When you raise the temperature, you're supplying energy to break the solute's lattice and form new interactions with the solvent. If the dissolution process is endothermic, heating makes it more favorable, so more solute dissolves. For many solids in liquids, solubility tends to increase with temperature, though there are exceptions when dissolution is exothermic. Pressure comes into play mainly for gases dissolving in liquids. According to Henry's law, increasing the partial pressure of a gas above a solution pushes more gas into solution, so its solubility increases. For most solids, changing pressure has little effect on how much can dissolve. Agitation and surface area affect how fast dissolution occurs but not the total amount that can dissolve at equilibrium. So the true statement is that temperature and pressure do affect solubility.

5. A mixture is best described as which of the following?

A. A pure substance with fixed composition

B. A substance containing only one element

C. A compound formed by chemical bonding

D. A combination of two or more substances that are not chemically combined

A mixture is a combination of two or more substances that are not chemically bound to each other, so each component keeps its own identity and properties. Because they're not joined by chemical bonds, the components can be present in any proportion and can be separated by physical methods like filtration, distillation, or simple picking apart. This differs from pure substances, which have a fixed composition. An element is a pure substance consisting of only one type of atom, and a compound is made from two or more elements chemically bonded in a fixed ratio, with properties that are different from the elements that compose it. So the idea that a mixture is simply a blend of substances that aren't chemically combined best captures what's being described.

6. The smallest building block of matter that defines an element's identity is called what?

A. Element

B. Proton

C. Neutron

D. Atom

An atom is the smallest unit that has the properties of an element. The identity of an element is fixed by the number of protons in the nucleus, the atomic number, which distinguishes one element from another. Protons and neutrons reside in the nucleus, with protons defining which element it is and neutrons contributing to mass and isotopes; electrons orbit around. Because the atom as a whole carries that defining proton count (and the accompanying electron structure that gives the element its behavior), it is the fundamental building block that defines the element itself.

7. Cathode rays originate from which particles?

A. Protons

B. Electrons

C. Neutrons

D. Photons

Cathode rays are streams of negatively charged particles produced when electrons are emitted from a heated cathode in a high-vacuum tube and accelerated toward the anode. This emission, called thermionic emission, creates a beam of electrons that travel as a ray and can produce a glow on a phosphor screen. Protons and neutrons are subatomic particles associated with the nucleus and are not emitted as a beam from a cathode in these devices, and photons are particles of light with no mass and are not the charged particles making up the ray. So the particles in cathode rays are electrons.

8. Strong acids ionize completely in water. Which statement is true?

A. Ionize completely in water

B. Ionize incompletely in water

C. Do not ionize at all

D. Only ionize at high temperatures

Strong acids ionize completely in water. When they dissolve, nearly every molecule donates a proton to water, producing hydronium ions and the corresponding conjugate base. The equilibrium lies far to the right, so there is essentially no undissociated acid left. This full ionization is why such solutions conduct electricity very well and have very low pH. The idea is that the acid dissociation constant is very large for strong acids, reflecting their tendency to dissociate completely. Temperature can shift equilibrium a bit, but the hallmark of a strong acid is that it ionizes completely under normal conditions, not that it only ionizes at high temperatures.

9. A more concentrated solution means more solute is dissolved. Which option best expresses this idea?

A. Less solute is dissolved

B. More solute is dissolved

C. Solute is completely insoluble

D. Solute remains as a separate phase

Concentration reflects how much solute is dissolved in a given amount of solvent. If you dissolve more solute, the solution becomes more concentrated. The best option is the one that says more solute is dissolved, because it directly states the increase in dissolved material, which raises the solute-to-solvent ratio. The other statements describe conditions where less solute dissolves, or nothing dissolves or remains separate, which would not describe a more concentrated solution.

10. Which statement correctly distinguishes suspensions from solutions?

A. Suspensions are uniform at all scales; solutions are not.

B. Suspensions have smaller particle sizes than solutions.

C. Suspensions have components that settle over time; solutions do not.

D. Suspensions are always transparent; solutions are never.

Suspensions differ from solutions in how the dispersed material behaves over time. In a suspension, the particles are large enough that gravity can pull them down, so the components separate and settle out with time, often forming a visible sediment. This means the mixture is not uniform unless it's stirred or shaken. In a solution, the solute is dissolved at the molecular or ionic level, creating a single, uniform phase that remains evenly distributed and does not settle under normal conditions. That difference—settling over time in suspensions versus staying uniformly mixed in solutions—is why this statement is the best choice. The other ideas don't fit: suspensions aren't uniform at all scales and typically appear cloudy because of dispersed particles; they do not have smaller particles than solutions; and they aren't guaranteed to be transparent.

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://nlnnexchemistry.examzify.com

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