ACIDS, BASES, AND SALTS PRACTICE TEST (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.

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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!

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Questions

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1. A strong acid in water undergoes what kind of dissociation?

A. It dissociates completely

B. It partially dissociates

C. It doesn't ionize

D. It yields OH- predominantly

2. In a Lewis acid–base interaction, which statement is exemplified by BF3 accepting an electron pair from NH3?

A. BF3 accepts an electron pair from NH3.

B. NH3 accepts an electron pair from BF3.

C. BF3 donates an electron pair.

D. NH3 donates a proton.

3. If a solution turns pink with phenolphthalein, what can be inferred about its pH?

A. Acidic

B. Basic

C. Neutral

D. Extremely acidic

4. Which statement about neutralization stoichiometry is true for a reaction between a monoprotic acid and a strong base?

A. The mole ratio is 2:1

B. The mole ratio is 1:1

C. The mole ratio is 1:2

D. The mole ratio is 3:1

5. Which of the following is an example of a salt?

A. NaCl

B. HCl

C. KOH

D. NH_4OH

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6. If a weak acid HA with Ka = 1×10^-5 is titrated with a strong base, is the pH at the equivalence point less than, equal to, or greater than 7?

A. Less than 7

B. Equal to 7

C. Greater than 7

D. Cannot be determined

7. When a buffer is infused with a strong acid, what is the effect on pH according to Henderson–Hasselbalch?

A. pH increases

B. pH decreases

C. pH remains unchanged

D. pH becomes unpredictable

8. Both HNO3 and CH3COOH can be classified as

A. Arrhenius acids that turn blue litmus red

B. Arrhenius bases that turn blue litmus red

C. Arrhenius acids that turn red litmus blue

D. Arrhenius bases that turn red litmus blue

9. What is the common name for LiOH?

A. Lithium oxide

B. Lithium hydroxide

C. Lithia hydroxide

D. Lithium hydroxide monohydrate

10. During neutralization of a strong acid with a strong base, the products are

A. HCl

B. NaOH

C. H2O and NaCl

D. NaCl

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Answers

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

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Explanations

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1. A strong acid in water undergoes what kind of dissociation?

A. It dissociates completely

B. It partially dissociates

C. It doesn't ionize

D. It yields OH- predominantly

When a strong acid is placed in water, it ionizes completely. This means every molecule donates a proton to water, producing hydronium ions (H_3O^+) and the corresponding conjugate base (the anion). The equilibrium lies far to the right, so essentially no undissociated acid remains in solution and the solution becomes highly acidic. This is different from weak acids, which only partially dissociate because their dissociation constant is small. The idea of yielding OH^- predominantly describes bases, not acids. So complete dissociation is the behavior of strong acids in water.

2. In a Lewis acid–base interaction, which statement is exemplified by BF_3 accepting an electron pair from NH_3?

A. BF_3 accepts an electron pair from NH_3.

B. NH_3 accepts an electron pair from BF_3.

C. BF_3 donates an electron pair.

D. NH_3 donates a proton.

In a Lewis acid–base interaction, the base is the electron-pair donor and the acid is the electron-pair acceptor. BF_3 is electron-deficient, with an empty orbital on boron, so it acts as a Lewis acid. NH_3 has a lone pair on nitrogen that can be donated, so it acts as a Lewis base. When they approach, the lone pair from NH_3 is donated into the empty orbital on BF_3, forming a B–N bond (a coordinate covalent bond, since both electrons in the bond come from NH_3). Therefore, BF_3 accepting an electron pair from NH_3 correctly describes the situation. The other statements would imply the opposite roles or a proton transfer, which isn't what happens in this Lewis acid–base interaction.

3. If a solution turns pink with phenolphthalein, what can be inferred about its pH?

A. Acidic

B. Basic

C. Neutral

D. Extremely acidic

Phenolphthalein is an indicator whose color reflects the solution's pH. It stays colorless in acidic and neutral solutions, but turns pink in basic (alkaline) ones. So a pink color means the pH is above about 8.2, indicating a basic solution rather than acidic or neutral. Extremely acidic would not produce pink.

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4. Which statement about neutralization stoichiometry is true for a reaction between a monoprotic acid and a strong base?

A. The mole ratio is 2:1

B. The mole ratio is 1:1

C. The mole ratio is 1:2

D. The mole ratio is 3:1

The main idea is that neutralization between a monoprotic acid and a strong base uses one proton from the acid for each hydroxide ion from the base. The reaction HA + OH− A− + H2O shows a one-to-one relationship: one mole of acid reacts with one mole of base. Therefore, the mole ratio is 1:1. Ratios like 2:1, 1:2, or 3:1 would imply more than one proton (or hydroxide) per acid molecule, which doesn't apply to a monoprotic acid.

5. Which of the following is an example of a salt?

A. NaCl

B. HCl

C. KOH

D. NH4OH

A salt is an ionic compound formed when an acid reacts with a base, made from a cation from the base and an anion from the acid, and it typically dissociates into ions in water. In this set, sodium chloride is the salt because it consists of Na+ from a base (NaOH) and Cl− from an acid (HCl). When it dissolves, it splits into Na+ and Cl− ions, neither acting as an acid or base in solution, which is characteristic of a neutral salt formed from a strong acid and a strong base. The other options are acids or bases themselves: HCl is a strong acid, KOH is a strong base, and NH4OH is a basic solution (ammonium hydroxide).

6. If a weak acid HA with Ka = 1×10^-5 is titrated with a strong base, is the pH at the equivalence point less than, equal to, or greater than 7?

A. Less than 7

B. Equal to 7

C. Greater than 7

D. Cannot be determined

At the equivalence point, all of the weak acid has been neutralized, leaving its conjugate base A− in solution. This A− undergoes hydrolysis: A− + H2O HA + OH−. The extent of this hydrolysis is governed by Kb, where Kb = Kw/Ka. With Ka = 1×10−5, Kb = 1×10−9, which is enough to generate OH− and push the pH above 7. The exact pH depends on the concentration, but the solution will be basic (greater than 7) at the equivalence point.

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7. When a buffer is infused with a strong acid, what is the effect on pH according to Henderson–Hasselbalch?

A. pH increases

B. pH decreases

C. pH remains unchanged

D. pH becomes unpredictable

Buffer systems resist pH changes by shifting the equilibrium between the weak acid and its conjugate base. According to Henderson–Hasselbalch, pH = pKa + log([A-]/[HA]). When a strong acid is added, there are extra H+ ions that protonate the conjugate base A- to form more of the weak acid HA. This lowers the amount of A- and increases HA, causing the ratio [A-]/[HA] to decrease. A smaller ratio makes the log term more negative, so the pH drops. The buffer slows the change rather than preventing it completely, until its capacity is exceeded. So the pH decreases.

8. Both HNO3 and CH3COOH can be classified as

A. Arrhenius acids that turn blue litmus red

B. Arrhenius bases that turn blue litmus red

C. Arrhenius acids that turn red litmus blue

D. Arrhenius bases that turn red litmus blue

Acids in the Arrhenius framework are substances that increase hydrogen ion concentration in water, giving the solution an acidic character that turns blue litmus paper red. Both nitric acid and acetic acid do that: when dissolved, they release H+ (hydronium ions) into the solution. Nitric acid dissociates fully, while acetic acid dissociates only partially, but each still provides H+ to the water, making the solution acidic. That acidic environment changes blue litmus to red. Bases, on the other hand, produce OH- and turn red litmus blue. So these compounds are Arrhenius acids and cause blue litmus paper to turn red.

9. What is the common name for LiOH?

A. Lithium oxide

B. Lithium hydroxide

C. Lithia hydroxide

D. Lithium hydroxide monohydrate

LiOH is lithium hydroxide. The name comes from lithium plus the hydroxide ion, which is the OH− group. If the compound were oxide, it would be Li2O, since oxide is O2− without hydrogen. The term lithia hydroxide isn't the standard name for this formula, and the hydrate form would be LiOH·H2O, called lithium hydroxide monohydrate, a different substance. So the common name for LiOH is lithium hydroxide.

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10. During neutralization of a strong acid with a strong base, the products are

A. HCl

B. NaOH

C. H_2O and NaCl

D. NaCl

When a strong acid reacts with a strong base, the H+ from the acid and the OH− from the base combine to form water. Because both are strong, they dissociate completely, so all H+ and OH− are consumed. The remaining ions—the cation from the base and the anion from the acid—pair to form a salt. In the common example, Na+ from the base and Cl− from the acid come together to make NaCl, while H+ and OH− produce H2O. So the products are water and the salt NaCl.

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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://acidsbasessalts.examzify.com

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

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