CHEMISTRY 1LD 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 reaction has theoretical yield 2.75 g CO_2; actual yield is 2.20 g. What is the percent yield?**

   A. 60.0%

   B. 80.0%

   C. 90.0%

   D. 70.0%

2. **Chronic toxicity refers to harmful effects that occur after:**

   A. many exposures over time

   B. a single exposure

   C. exposure during infancy only

   D. short-term exposure under 24 hours

3. **In the redox reaction $MnO_4^- + 5\ Fe^{2+} + 8\ H^+ \rightarrow Mn^{2+} + 5\ Fe^{3+} + 4\ H_2O$, how many electrons are transferred?**

   A. 3

   B. 6

   C. 5

   D. 4

4. **In GHS hazard categorization, which category number indicates an extremely flammable chemical?**

   A. HC 1

   B. HC 2

   C. HC 3

   D. HC 4

5. **Which hazard category is associated with producing genetic defects?**

   A. Eye Hazards

   B. Reproductive Toxicants

   C. Mutagens

   D. Acute Toxicants

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6. For the gas-phase equilibrium 2 $NO_2(g)$ $N_2O_4(g)$, at equilibrium $[NO_2] = 0.200$ M and $[N_2O_4] = 0.100$ M. Calculate Kc.

A. 0.5

B. 1

C. 2.5

D. 10

7. In $CH_4 + 2\ O_2$ $CO_2 + 2\ H_2O$, what is the mole ratio of CO_2 produced to CH_4 consumed?

A. 2:1

B. 1:1

C. 1:2

D. 3:1

8. Which chemical has the lowest permissible exposure limit (PEL) among the following: Hexane, Dichloromethane, Ethyl acetate, Methanol?

A. Hexane

B. Dichloromethane

C. Ethyl acetate

D. Methanol

9. Which statement correctly describes LD50 and LC50?

A. LD50 is a lethal dose; LC50 is a lethal concentration

B. LD50 measures concentration; LC50 measures dose

C. Both measure the same thing; no difference

D. LD50 relates to toxicity in plants only

10. In a buffer where pH equals pKa, what is the ratio $[A^-]/[HA]$?

A. 1

B. 0

C. 10

D. 0.1

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Answers

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

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Explanations

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1. A reaction has theoretical yield 2.75 g CO_2; actual yield is 2.20 g. What is the percent yield?

A. 60.0%

B. 80.0%

C. 90.0%

D. 70.0%

Percent yield tells you how much product you actually got compared to what you could theoretically get, expressed as a percentage. It's calculated as actual yield divided by theoretical yield, times 100%. Here, the actual yield is 2.20 g of CO_2 and the theoretical yield is 2.75 g. So 2.20 ÷ 2.75 = 0.80, and 0.80 × 100% = 80.0%. The reaction produced 80.0% of the theoretical amount. If you check the other options, 60% would correspond to 1.65 g, 70% to 1.93 g, and 90% to 2.48 g. The observed 2.20 g matches 80.0%.

2. Chronic toxicity refers to harmful effects that occur after:

A. many exposures over time

B. a single exposure

C. exposure during infancy only

D. short-term exposure under 24 hours

Chronic toxicity arises from long-term or repeated exposure to a substance, allowing damage to accumulate or develop over time. When exposure happens many times across days, months, or years, adverse effects may take time to manifest as the body's systems are affected cumulatively. This contrasts with acute toxicity, where harmful effects show up soon after a single exposure. So repeated exposures over an extended period best describe chronic toxicity, while a one-time exposure, brief exposure, or age-specific-only exposure isn't the defining pattern.

3. In the redox reaction $MnO_4^- + 5\ Fe^{2+} + 8\ H^+ \rightarrow Mn^{2+} + 5\ Fe^{3+} + 4\ H_2O$, how many electrons are transferred?

A. 3

B. 6

C. 5

D. 4

Electron transfer in redox reactions is about how many electrons move from the species being oxidized to the species being reduced. Here, permanganate is reduced from MnO_4^- (Mn on +7) to Mn^{2+} (Mn on +2), a gain of 5 electrons. At the same time, five Fe^{2+} ions are each oxidized to Fe^{3+}, losing one electron apiece, for a total of 5 electrons donated. The number of electrons gained must equal the number donated, so the total transferred is 5. The other numbers would not balance the electron flow in this reaction.

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4. In GHS hazard categorization, which category number indicates an extremely flammable chemical?

A. HC 1

B. HC 2

C. HC 3

D. HC 4

GHS hazard categorization uses a tiered scale for flammable substances, where the most severe level is labeled as extremely flammable. That designation means the substance has the highest risk of ignition and rapid combustion, so it sits at the top of the flammability categories. The correct choice is the one that represents this strongest, most dangerous flammability label. The other levels describe progressively less severe conditions (highly flammable, flammable, etc.), which do not match the extremely flammable designation.

5. Which hazard category is associated with producing genetic defects?

A. Eye Hazards

B. Reproductive Toxicants

C. Mutagens

D. Acute Toxicants

The concept here is how hazards relate to genetic change. Mutagens are agents that increase the rate of mutations in DNA, which can lead to genetic defects in organisms or offspring. Because producing genetic defects directly involves causing changes in genetic material, mutagens are the best fit for this description. Reproductive toxicants can affect fertility or development but don't necessarily cause DNA mutations themselves; eye hazards pertain to damage to the eyes, and acute toxicants cause immediate toxic effects rather than genetic changes. So the category that best matches producing genetic defects is mutagens.

6. For the gas-phase equilibrium 2 NO2(g) N2O4(g), at equilibrium [NO2] = 0.200 M and [N2O4] = 0.100 M. Calculate Kc.

A. 0.5

B. 1

C. 2.5

D. 10

The key idea is how to write the equilibrium constant expression for a gas-phase reaction. For 2 NO2 N2O4, the expression is Kc = [N2O4] / [NO2]^2, because two NO2 molecules combine to form one N2O4. Plug in the given concentrations: [N2O4] = 0.100 M and [NO2] = 0.200 M. So Kc = 0.100 / (0.200)^2 = 0.100 / 0.0400 = 2.5. Thus the value of the equilibrium constant is 2.5, indicating the equilibrium lies somewhat toward the product side.

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7. In $CH_4 + 2\ O_2 \rightarrow CO_2 + 2\ H_2O$, what is the mole ratio of CO_2 produced to CH_4 consumed?

A. 2:1

B. 1:1

C. 1:2

D. 3:1

In a balanced equation, the numbers in front of each substance show how many moles of each species react or are formed. Here, CH_4 has a coefficient of 1 and CO_2 also has a coefficient of 1, so for every mole of CH_4 that reacts, exactly one mole of CO_2 is produced. That makes the mole ratio of CO_2 produced to CH_4 consumed equal to 1:1. If you start with 1 mole of CH_4, you'll get 1 mole of CO_2; with 0.5 mole of CH_4, you'd get 0.5 mole of CO_2, and so on.

8. Which chemical has the lowest permissible exposure limit (PEL) among the following: Hexane, Dichloromethane, Ethyl acetate, Methanol?

A. Hexane

B. Dichloromethane

C. Ethyl acetate

D. Methanol

Permissible exposure limits are set to protect workers from the health effects of inhaled solvents, and the lower the limit, the more hazardous the chemical is considered to be. Dichloromethane is one of the most hazardous among those listed because it is readily absorbed and metabolized to highly toxic products, such as phosgene, which can cause serious lung injury and other systemic effects even at very low concentrations. This combination of high acute and potential carcinogenic risk pushes regulators to impose a very strict limit—much lower than for the other solvents. Hexane mainly carries a risk of nerve damage with long-term exposure, but its regulatory limit is higher. Methanol is also highly toxic, particularly to the nervous system and eyes, but its exposure limit is not as low as that for dichloromethane. Ethyl acetate is comparatively less toxic and has a higher allowable exposure. Because of its especially severe potential health effects at low concentrations, dichloromethane ends up with the lowest permissible exposure limit.

9. Which statement correctly describes LD50 and LC50?

A. LD50 is a lethal dose; LC50 is a lethal concentration

B. LD50 measures concentration; LC50 measures dose

C. Both measure the same thing; no difference

D. LD50 relates to toxicity in plants only

LD50 and LC50 both describe the exposure level that kills 50% of a test population, but they measure different things. LD50 is a lethal dose, typically expressed as milligrams of substance per kilogram of body weight (mg/kg), reflecting the amount delivered to the organism. LC50 is a lethal concentration, expressed as milligrams of substance per liter of air or water (mg/L) or in ppm, reflecting the concentration present in the environment that organisms are exposed to. So saying that LD50 is a lethal dose and LC50 is a lethal concentration precisely captures the distinction between dose to an organism and concentration in its surroundings. They're not the same thing, and LD50 is not limited to plants.

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10. In a buffer where pH equals pKa, what is the ratio [A−]/[HA]?

A. 1

B. 0

C. 10

D. 0.1

When pH equals pKa, the conjugate base form and the weak acid form are present in equal amounts. This comes from the Henderson–Hasselbalch equation: pH = pKa + log([A−]/[HA]). If pH = pKa, the log term is zero, so [A−]/[HA] = 10^0 = 1. Therefore the ratio is 1, meaning there are equal concentrations of A− and HA. This balance is what gives buffers around the pKa their distinctive buffering ability, since the two forms can readily neutralize added acid or base.

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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://chem1ld.examzify.com

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

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