

IB CHEMISTRY STANDARD LEVEL (SL) PRACTICE EXAM (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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THE FULL VERSION STUDY GUIDE**

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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 type of spectrum does not consist of continuous wavelengths but consists of distinct lines?**
- A. Continuous Spectrum
 - B. Emission Spectrum
 - C. Line Spectrum
 - D. Absorption Spectrum
- 2. What term is used to describe a chemically reactive substance?**
- A. Corrosive
 - B. Inert
 - C. Stable
 - D. Non-reactive
- 3. What is a solution?**
- A. A homogeneous mixture of two or more substances
 - B. A heterogeneous mixture that settles over time
 - C. A single element in its pure form
 - D. A new chemical compound formed by a reaction
- 4. What does the term precision refer to in a set of experimental measurements?**
- A. How accurate the instrument is
 - B. The closeness of several measurements to each other
 - C. The average of all measurements taken
 - D. The range of values in a set of measurements
- 5. What is the term for a negative ion that gains electrons?**
- A. Electrolyte
 - B. Cation
 - C. Anion
 - D. Free radical

- 6. What is produced when an acid reacts with a base?**
- A. Salt and water
 - B. Hydrogen gas
 - C. Carbon dioxide
 - D. Electrons
- 7. Which of the following is not one of the four types of organic reactions?**
- A. Addition
 - B. Precipitation
 - C. Substitution
 - D. Elimination
- 8. Which type of agent readily accepts electrons and oxidizes other agents?**
- A. Reducing agent
 - B. Oxidizing agent
 - C. Neutral agent
 - D. Catalyst
- 9. What type of equilibrium is established in a reversible reaction?**
- A. A dynamic equilibrium
 - B. A static equilibrium
 - C. A non-chemical equilibrium
 - D. A phase equilibrium
- 10. When considering a chemical reaction, what does an increase in temperature generally lead to in terms of reaction rate?**
- A. Decrease in reaction rate
 - B. No change
 - C. Increase in reaction rate
 - D. Reaction halt

Answers

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

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Explanations

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1. Which type of spectrum does not consist of continuous wavelengths but consists of distinct lines?

- A. Continuous Spectrum
- B. Emission Spectrum
- C. Line Spectrum**
- D. Absorption Spectrum

The correct choice is the line spectrum, which is characterized by distinct lines that represent specific wavelengths of light emitted or absorbed by a substance. This type of spectrum arises from the transitions of electrons between energy levels in atoms. When an electron absorbs energy, it moves to a higher energy level; conversely, when it returns to a lower energy level, it releases energy in the form of light at specific wavelengths. The result is a spectrum with sharp lines corresponding to these transitions, rather than a continuous range of wavelengths. In contrast, a continuous spectrum features a seamless blend of colors, covering a wide range of wavelengths without any gaps. Emission spectra can consist of line spectra when viewed under specific contexts, as they show the wavelengths emitted by electrons transitioning down to lower energy levels. Absorption spectra involve the absorption of specific wavelengths of light by atoms or molecules, leading to dark lines against a continuous spectrum usually produced by a hot source. Each of these types of spectra provides valuable information correlating to atomic and molecular structures, but only the line spectrum distinctly exhibits separate lines indicating particular wavelengths.

2. What term is used to describe a chemically reactive substance?

- A. Corrosive**
- B. Inert
- C. Stable
- D. Non-reactive

The term "corrosive" is indeed used to describe a chemically reactive substance. Corrosive materials are capable of reacting with and possibly destroying other substances, such as metals, skin, and other materials. This reactivity is often due to their ability to undergo chemical reactions that break down the structure of other compounds. In the context of chemical behavior, a corrosive substance typically has strong acids or bases that can engage in reactions leading to degradation, which underscores their highly reactive nature. This characteristic can often lead to significant changes in the physical and chemical properties of the substances they encounter. Understanding corrosive materials is essential in various fields, including chemistry, materials science, and industrial applications, as they can pose safety hazards if not handled properly.

3. What is a solution?

- A. A homogeneous mixture of two or more substances
- B. A heterogeneous mixture that settles over time
- C. A single element in its pure form
- D. A new chemical compound formed by a reaction

A solution is defined as a homogeneous mixture of two or more substances, where the components are uniformly distributed throughout the mixture. This means that in a solution, the composition is consistent and the individual substances, such as solute and solvent, cannot easily be distinguished from one another. For example, when salt is dissolved in water, the salt and water form a clear liquid with the solute evenly dispersed at the molecular level, creating a uniform appearance. In contrast, the other options do not accurately describe a solution. A heterogeneous mixture involves distinct components that can be seen and may settle over time, such as oil and water. A single element in its pure form does not constitute a mixture but rather a specific type of substance, which would not be classified as a solution. Lastly, a new chemical compound formed by a reaction denotes a chemical change resulting in substances with different properties from the reactants, which is not characteristic of the physical blending that occurs in a solution. Therefore, defining a solution as a homogeneous mixture correctly encapsulates its essential characteristics.

4. What does the term precision refer to in a set of experimental measurements?

- A. How accurate the instrument is
- B. The closeness of several measurements to each other
- C. The average of all measurements taken
- D. The range of values in a set of measurements

Precision specifically refers to the closeness of multiple measurements to each other, highlighting the consistency or repeatability of results when an experiment is carried out under the same conditions. When a set of measurements is precise, it indicates that the values are tightly clustered together, regardless of whether they are close to the true or accepted value (which is a concept related to accuracy). In contrast, accuracy pertains to how close a measurement is to the true value, rather than to the other measurements in the set. The average of all measurements taken, while reflective of a central tendency, does not inherently convey the degree of consistency among the individual values. Similarly, the range of values provides information about the spread between the highest and lowest measurements, but does not indicate how closely the individual measurements align with each other. Therefore, the most appropriate definition of precision in this context is the closeness of several measurements to one another.

5. What is the term for a negative ion that gains electrons?

- A. Electrolyte
- B. Cation
- C. Anion
- D. Free radical

The term for a negative ion that gains electrons is an anion. When a neutral atom gains one or more electrons, it results in a net negative charge because the number of negatively charged electrons exceeds the number of positively charged protons in the nucleus. This process typically occurs with nonmetals, which have a higher electron affinity and tend to accept electrons to achieve a more stable electronic configuration, often resembling that of noble gases. For example, a chlorine atom (Cl) can gain an electron to become a chloride ion (Cl⁻), exhibiting how atoms become anions through the gain of electrons. Understanding the characteristics of anions is essential in various chemical contexts, including ionic bonding and the behavior of substances in solutions.

6. What is produced when an acid reacts with a base?

- A. Salt and water
- B. Hydrogen gas
- C. Carbon dioxide
- D. Electrons

When an acid reacts with a base, the primary products of this neutralization reaction are salt and water. In this process, an acid donates a proton (H^+) to the base, which typically has hydroxide ions (OH^-). The combination of H^+ from the acid and OH^- from the base forms water (H_2O). The remaining components combine to form a salt, which is an ionic compound. The specific salt produced depends on the particular acid and base involved in the reaction. For instance, if hydrochloric acid (HCl) reacts with sodium hydroxide ($NaOH$), the resulting salt is sodium chloride ($NaCl$), along with water. This reaction is fundamental in acid-base chemistry and illustrates the characteristics of neutralization reactions, where the properties of the acid and base are effectively "neutralized." Hence, the formation of both salt and water is a characteristic outcome of this type of chemical reaction.

7. Which of the following is not one of the four types of organic reactions?

- A. Addition
- B. Precipitation
- C. Substitution
- D. Elimination

Organic chemistry encompasses several types of reactions that are fundamental to understanding how organic compounds behave and interact. The four primary types of organic reactions are addition, substitution, elimination, and rearrangement. In an addition reaction, two or more reactants combine to form a single product, which is commonly seen in reactions involving alkenes and alkynes where π bonds are broken to form new σ bonds. Substitution reactions involve the replacement of one functional group in a molecule with another, commonly occurring in reactions with alkanes and aromatic compounds. Elimination reactions involve the removal of a small molecule from a larger molecule, typically resulting in the formation of a double or triple bond, often observed with alcohols where water is eliminated. Precipitation does not fall under the umbrella of organic reactions but rather describes a reaction that occurs in aqueous solutions, mainly in inorganic chemistry where a solid forms from two aqueous solutions, contributing to a different category of chemical reactivity. Thus, precipitation is the correct answer as it is not considered one of the main types of organic reactions.

8. Which type of agent readily accepts electrons and oxidizes other agents?

- A. Reducing agent
- B. Oxidizing agent**
- C. Neutral agent
- D. Catalyst

An oxidizing agent is a substance that readily accepts electrons during a chemical reaction. This characteristic allows it to facilitate oxidation in other substances. When an oxidizing agent gains electrons, it is itself reduced, while simultaneously causing another substance to lose electrons and thus become oxidized. Oxidizing agents are critical in redox (oxidation-reduction) reactions, as they drive the process of electron transfer. For example, in a reaction involving a metal and a non-metal, the non-metal often serves as the oxidizing agent, accepting electrons from the metal and thereby causing it to oxidize. Common oxidizing agents include substances like oxygen, chlorine, and potassium permanganate, all of which can accept electrons and promote oxidation in other substances. In contrast, while reducing agents donate electrons and reduce other substances, neutral agents do not facilitate oxidation-reduction reactions, and catalysts do not change oxidation states; they simply speed up reactions without being consumed. Thus, the role of an oxidizing agent is fundamental in understanding how redox reactions work in chemistry.

9. What type of equilibrium is established in a reversible reaction?

- A. A dynamic equilibrium**
- B. A static equilibrium
- C. A non-chemical equilibrium
- D. A phase equilibrium

In a reversible reaction, a dynamic equilibrium is established, where the rates of the forward and reverse reactions are equal. This means that reactants are continuously being converted into products and products are being converted back into reactants at the same rate. As a result, the concentrations of both reactants and products remain constant over time, although the molecules are still actively reacting within the system. This contrasts with a static equilibrium, which implies that no movement or reaction occurs, leading to a completely unchanging state. Therefore, a static equilibrium does not apply to reversible reactions, where continual processes are taking place. Non-chemical equilibrium is not a term typically associated with chemical reactions, making it an unsuitable choice for this context. Similarly, a phase equilibrium pertains specifically to the balance between different physical states of a substance (such as solid, liquid, or gas), rather than the chemical changes occurring in a reversible reaction. Thus, the choice of dynamic equilibrium is the only appropriate response, reflecting the ongoing nature of reversible reactions.

10. When considering a chemical reaction, what does an increase in temperature generally lead to in terms of reaction rate?

- A. Decrease in reaction rate
- B. No change
- C. Increase in reaction rate**
- D. Reaction halt

An increase in temperature typically results in an increase in the reaction rate due to several key factors. As temperature rises, the kinetic energy of the reactant molecules also increases. This heightened energy level means that molecules move faster and collide more often, which enhances the likelihood of successful interactions that can lead to a reaction. Additionally, at higher temperatures, the fraction of collisions that have sufficient energy to overcome the activation energy barrier increases. This leads to more effective collisions and thus speeds up the rate at which products are formed. In most chemical reactions, this principle aligns with the collision theory, which states that for a reaction to occur, particles must collide with adequate energy and proper orientation. Temperature influences both the energy and frequency of these collisions, ultimately accelerating the reaction process.

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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:

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

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