GEORGIA STATE UNIVERSITY (GSU) CHEM 1211K PRINCIPLES OF CHEMISTRY I TEST 1 PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://gsu-chem1211ktest1.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright 1
Table of Contents 2
Introduction 3
How to Use This Guide 4
Questions 5
Answers 8
Explanations 10
Next Steps 15

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. Absolute zero is the lowest possible temperature on the Fahrenheit or Celsius scales.

A. It is the highest possible temperature on the Fahrenheit scale.

B. It is the lowest possible temperature on the Fahrenheit or Celsius scales.

C. It is exactly 100°C.

D. It is the same as 0 K.

2. Which separation technique involves letting a mixture stand and pouring off the liquid without disturbing the solid?

A. Filtration

B. Distillation

C. Crystallization

D. Decanting

3. The particles in the nucleus are collectively called _____.

A. Quarks

B. Leptons

C. Nucleons

D. Bosons

4. Which principle describes the energy never being created or destroyed, only transformed?

A. Law of Thermodynamics

B. Newton's First Law

C. Conservation of energy

D. Avogadro's principle

5. What unit expresses the molecular weight shown for CO2?

A. kg/mol

B. L

C. mol

D. g/mol

SAMPLE

6. Determine the volume of hexane that contains 5.33 × 10^22 molecules, given density 0.6548 g/mL and molar mass 86.17 g/mol.

A. 1.16 mL

B. 11.6 mL

C. 116 mL

D. 0.116 mL

7. If an element has atomic number 6 and mass number 12, how many neutrons does it have?

A. 6

B. 7

C. 12

D. 0

8. Which statement best describes an ionic bond?

A. Involves a sea of electrons around a lattice

B. Occurs only between nonmetals

C. Formed when electrons are shared between atoms

D. Formed when one or more electrons are transferred from one atom to another

9. Density is defined as which of the following?

A. mass/volume

B. volume/mass

C. mass*volume

D. density

10. J. J. Thomson is known for discovering which particle?

A. Neutron

B. Proton

C. Electron

D. Positron

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Absolute zero is the lowest possible temperature on the Fahrenheit or Celsius scales.

A. It is the highest possible temperature on the Fahrenheit scale.

B. It is the lowest possible temperature on the Fahrenheit or Celsius scales.

C. It is exactly 100°C.

D. It is the same as 0 K.

Absolute zero is the lowest limit of temperature because at that point, molecular motion, in the classical sense, would stop. On the Celsius and Fahrenheit scales, this limit sits far below where those scales set their zero values. Specifically, absolute zero is -273.15°C and -459.67°F, while 0°C and 0°F are much higher. Therefore, absolute zero is the lowest possible temperature on the Fahrenheit or Celsius scales. Note that 0 K corresponds to absolute zero, but that statement is about the Kelvin scale, not about Fahrenheit or Celsius, so it doesn't change which temperature is the lowest on those scales.

2. Which separation technique involves letting a mixture stand and pouring off the liquid without disturbing the solid?

A. Filtration

B. Distillation

C. Crystallization

D. Decanting

Decanting is the technique that uses gravity to separate a liquid from a solid that has settled to the bottom. When the solid settles, you carefully pour the liquid from the top into a new container, leaving the solid behind. This works well for suspensions like muddy water where the solid is denser and settles quickly, allowing you to remove most of the liquid without disturbing the sediment. This differs from filtration, which forces liquid through a barrier to trap solids; distillation relies on changing phase by heating; and crystallization forms solid crystals from a solution. Decanting is a simple, chemical-free separation based on sedimentation and careful pouring, though it may not remove all fine particles.

3. The particles in the nucleus are collectively called _____.

A. Quarks

B. Leptons

C. Nucleons

D. Bosons

Particles in the nucleus are protons and neutrons, and together they are called nucleons. The term nucleon specifically refers to any particle that makes up the nucleus. Quarks are the smaller constituents inside protons and neutrons, so they aren't the collective nuclear particles themselves. Leptons, such as electrons and neutrinos, are not the nucleus's constituents in a typical atom. Bosons are force-carrier particles like photons and gluons, not the nucleus's building blocks. So nucleons is the correct term for the particles in the nucleus.

SAMPLE

4. Which principle describes the energy never being created or destroyed, only transformed?

A. Law of Thermodynamics

B. Newton's First Law

C. Conservation of energy

D. Avogadro's principle

Energy conservation is the idea that energy in a closed system stays constant. It can change form—kinetic, potential, chemical, electrical, or thermal—but the total amount of energy doesn't disappear or appear from nowhere. For example, a falling object trades gravitational potential energy for kinetic energy as it speeds up, while a light bulb converts electrical energy into light and thermal energy. In thermodynamics, the first law expresses this as the change in a system's internal energy equaling heat added plus work done on the system; if no energy crosses the boundary, the total energy remains the same. The other statements describe different concepts. Newton's First Law is about inertia and motion, Avogadro's principle relates to gas volumes at a given temperature and pressure, and calling something the Law of Thermodynamics is broader than the specific idea of energy conservation, though it includes it. The precise principle described here is Conservation of energy.

5. What unit expresses the molecular weight shown for CO2?

A. kg/mol

B. L

C. mol

D. g/mol

Mass per amount of substance is what molecular weight represents. For CO2, the molar mass (the mass of one mole) is found by adding the atomic masses: carbon about 12.01 and oxygen about 16.00 each, so 12.01 + 2×16.00 = 44.01. The natural way to write this is in grams per mole, giving 44.01 g/mol. While kilograms per mole could also describe molar mass, chemists usually use g/mol to keep numbers convenient. The other options don't fit because L is a volume, and mol is a measure of amount of substance, not mass.

6. Determine the volume of hexane that contains 5.33 × 10^22 molecules, given density 0.6548 g/mL and molar mass 86.17 g/mol.

A. 1.16 mL

B. 11.6 mL

C. 116 mL

D. 0.116 mL

This question tests using the mole concept and density to connect a count of molecules to a volume. Start by turning the given number of molecules into moles with Avogadro's number: 5.33 × 10^22 molecules ÷ 6.022 × 10^23 molecules per mole ≈ 0.0885 mol. Next convert moles to mass using the molar mass of hexane: 0.0885 mol × 86.17 g/mol ≈ 7.63 g. Finally, use density to get volume, since density = mass/volume, so volume = mass ÷ density = 7.63 g ÷ 0.6548 g/mL ≈ 11.6 mL. The volume corresponding to that many hexane molecules is about 11.6 mL.

SAMPLE

7. If an element has atomic number 6 and mass number 12, how many neutrons does it have?

A. 6

B. 7

C. 12

D. 0

Atomic number tells how many protons are in the nucleus, and mass number equals protons plus neutrons. With an atomic number of 6, there are 6 protons. A mass number of 12 means the nucleus has 12 particles total, so neutrons = 12 − 6 = 6. Therefore, this isotope has six neutrons (carbon-12). If there were 7 neutrons, the mass would be 13; with 0 neutrons, the mass would be 6; with 12 neutrons, the mass would be 18.

8. Which statement best describes an ionic bond?

A. Involves a sea of electrons around a lattice

B. Occurs only between nonmetals

C. Formed when electrons are shared between atoms

D. Formed when one or more electrons are transferred from one atom to another

An ionic bond forms when one atom donates electrons to another, creating positively charged and negatively charged ions that attract each other. This transfer leads to a lattice of ions held together by strong electrostatic forces, typically occurring between metals (which tend to lose electrons) and nonmetals (which tend to gain electrons). Sharing electrons describes covalent bonding, so that option doesn't fit ionic bonds. A "sea of electrons around a lattice" describes metallic bonding, not ionic. The essential idea is electron transfer and the resulting opposite charges that bind the compound.

9. Density is defined as which of the following?

A. mass/volume

B. volume/mass

C. mass*volume

D. density

Density tells us how much matter is packed into a given amount of space. It is the ratio of mass to volume, so density equals mass divided by volume. This means knowing mass and volume lets you compute density directly, and knowing density and volume lets you find mass. The units reflect this ratio, like g/cm^3 for solids or g/mL for liquids. For example, if you have a 100 g piece that occupies 50 cm^3, its density is 100 g / 50 cm^3 = 2 g/cm^3. If you increase the volume while keeping mass the same, density decreases; if you increase the mass at the same volume, density increases. The other expressions don't define density: volume per mass would be the reciprocal of density, and mass times volume doesn't correspond to a density.

SAMPLE

10. J. J. Thomson is known for discovering which particle?

A. Neutron

B. Proton

C. Electron

D. Positron

Thomson's cathode-ray tube experiments showed the beam could be deflected by electric and magnetic fields in a way that reveals the particles have a negative charge and a very small mass.From these measurements of the charge-to-mass ratio, he concluded there are components of atoms that are smaller than the atom itself—the electron. This established that atoms are made of smaller charged particles and shifted atomic theory toward a model with subatomic constituents. The other particles listed were identified later by different scientists (protons by Rutherford, neutrons by Chadwick, positrons discovered later). So the particle Thomson discovered is the electron.

SAMPLE

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://gsu-chem1211ktest1.examzify.com

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

SAMPLE