

# Answer Sheet for Sample Problems for Chemistry Level 1 Final Exam 2013-2014 Study Guide

## Electrons in Atoms – Chapter 5

1. What is the frequency of green light, which has a wavelength of  $4.90 \times 10^{-7} \text{ m}$ ?

$$c = \lambda \nu \quad \lambda = 4.90 \times 10^{-7} \text{ m}, c = 3.00 \times 10^8 \text{ m/s} \quad \nu = ? \text{ Hz} \quad \nu = \frac{c}{\lambda} = \frac{3.00 \times 10^8 \text{ m/s}}{4.90 \times 10^{-7} \text{ m}}$$

$6.12 \times 10^{14} \text{ Hz}$

2. An x-ray has a wavelength of  $1.15 \times 10^{-10} \text{ m}$ . What is its frequency?

$$c = \lambda \nu \quad \lambda = 1.15 \times 10^{-10} \text{ m}, c = 3.00 \times 10^8 \text{ m/s} \quad \nu = ? \text{ Hz} \quad \nu = \frac{c}{\lambda} = \frac{3.00 \times 10^8 \text{ m/s}}{1.15 \times 10^{-10} \text{ m}}$$

$2.61 \times 10^{18} \text{ Hz}$

3. Which type of electromagnetic radiation has the most energy: Microwaves, X-Rays, or Visible light? Why?

Ans: X-Rays, b/c they have the shortest wavelength and highest frequency of the types listed and frequency and energy are directly related.

4. What is the energy of a  $9.50 \times 10^{13} \text{ Hz}$  radiation?

$$E = h\nu \quad \nu = 9.50 \times 10^{13} \text{ Hz}, h = 6.626 \times 10^{-34} \text{ J s} \quad E = ? \text{ J}$$

$$E = h\nu = (6.626 \times 10^{-34} \text{ J s}) (9.50 \times 10^{13} \text{ s}^{-1}) = \underline{6.29 \times 10^{-19} \text{ J}}$$

5. The element with the electron configuration of  $[\text{Kr}]5s^2 4d^{10} 5p^1$  is indium (In)

6. Barium (Ba)

7. Write out the electron configurations for the following elements: (For the exam make sure you know how to do both the complete and the noble gas short cut for electron configurations)

a. Tc                      Ans:  $1s^2 2s^2 2p^6 3s^2 3p^4 4s^2 3d^{10} 4p^6 5s^2 4d^5$  or  $[\text{Kr}]5s^2 4d^5$

b. Aluminum            Ans:  $1s^2 2s^2 2p^6 3s^2 3p^1$  or  $[\text{Ne}] 3s^2 3p^1$

8. Why are Cr and Cu exceptions to writing the electron configurations of elements?

They are exceptions because instead of following the pattern of filling up the d orbitals Cr actually has a half filled s and d orbitals and Cu has a half filled s and completely filled d orbitals. The reason why this occurs is because the electrons in the d-sublevel are more stable with this electron configuration than the expected configuration.

9. a. Ca

b. As

c. Sn

a. 2     Ca.

b. 5     As.

c. 4     Sn.

## Periodic Table and Periodic Trends – Chapter 6

1. Compare & contrast how Mendeleev's periodic table was organized to how Moseley organized it.

# Chemistry Semester Test Review 2012 Answer Key

**Piera Centobelli, Roberto Cerchione**



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Fossil Energy Update,1980 Transparency in Assessment - Exploring the Influence of Explicit Assessment Criteria Anders Jönsson,Frans Prins,2019-04-03 In many schools and higher education institutions it has become common practice to share assessment criteria with students Sometimes it is required for accountability purposes at other times criteria are used as a means to communicate expectations to students However the idea that explicit assessment criteria should be shared with students has been contested On the one hand research has shown that explicit criteria may positively affect student performance reduce their anxiety as well as support students use of self regulated learning strategies On the other hand there are fears that explicit criteria may have a restraining influence on students learning as well as limiting their autonomy and creativity There are also indications of students becoming more performance oriented as opposed to learning oriented when being provided with explicit assessment criteria Taken together it is not fully understood under which circumstances it is productive for student learning to share explicit assessment criteria and under which circumstances it is not In particular empirical research on the proposed negative effects of sharing criteria with learners is limited and most fears voiced in the literature are based on individual experiences and anecdotal evidence In this book we therefore bring different perspectives on transparency in assessment together in order to further our understanding of how students are influenced by the use of explicit assessment criteria A deeper understanding of the influence of explicit assessment criteria on students understanding of criteria motivation and learning is equally imperative for future research and educational practice both of which need to go beyond individual opinions and convictions *23rd European Conference on Knowledge Management Vol 2* Piera Centobelli,Roberto Cerchione,2022-09-01 *Vacuum Bubbling* Yong Du Jun,2024-05-23 *Vacuum Bubbling* introduces the background and applications for generating bubbles under a vacuum condition accomplished through

depressurization without the need to heat water It presents the advantage of utilizing vapor bubble in deaeration applications because the diffusion for degassing happens between the water body and micro vapor bubbles without the need of membrane or packing Instead of relying on massive heating vacuum bubbling focuses on depressurization down to the level of saturated vapor pressure or below to secure vapor bubbles with virtually zero dissolved non condensable gases including oxygen The book considers prospective applications such as extracting high oxygen content air from water for underwater breathing pretreatment of aircraft fuel before being pumped into a fuel tank system and probable desalination applications through massive bubbling combined with low grade renewable energy The book is intended for researchers in thermal fluids heat and mass transfer process engineering and water treatment fields and industry professionals working in power generation plant and process engineering transportation and energy     Chemistry and Industry ,1963     *Energy Research Abstracts* ,1980  
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### **Table of Contents Chemistry Semester Test Review 2012 Answer Key**

1. Understanding the eBook Chemistry Semester Test Review 2012 Answer Key
  - The Rise of Digital Reading Chemistry Semester Test Review 2012 Answer Key
  - Advantages of eBooks Over Traditional Books
2. Identifying Chemistry Semester Test Review 2012 Answer Key
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Chemistry Semester Test Review 2012 Answer Key
  - User-Friendly Interface
4. Exploring eBook Recommendations from Chemistry Semester Test Review 2012 Answer Key
  - Personalized Recommendations
  - Chemistry Semester Test Review 2012 Answer Key User Reviews and Ratings
  - Chemistry Semester Test Review 2012 Answer Key and Bestseller Lists

5. Accessing Chemistry Semester Test Review 2012 Answer Key Free and Paid eBooks
  - Chemistry Semester Test Review 2012 Answer Key Public Domain eBooks
  - Chemistry Semester Test Review 2012 Answer Key eBook Subscription Services
  - Chemistry Semester Test Review 2012 Answer Key Budget-Friendly Options
6. Navigating Chemistry Semester Test Review 2012 Answer Key eBook Formats
  - ePub, PDF, MOBI, and More
  - Chemistry Semester Test Review 2012 Answer Key Compatibility with Devices
  - Chemistry Semester Test Review 2012 Answer Key Enhanced eBook Features
7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Chemistry Semester Test Review 2012 Answer Key
  - Highlighting and Note-Taking Chemistry Semester Test Review 2012 Answer Key
  - Interactive Elements Chemistry Semester Test Review 2012 Answer Key
8. Staying Engaged with Chemistry Semester Test Review 2012 Answer Key
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Chemistry Semester Test Review 2012 Answer Key
9. Balancing eBooks and Physical Books Chemistry Semester Test Review 2012 Answer Key
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Chemistry Semester Test Review 2012 Answer Key
10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
11. Cultivating a Reading Routine Chemistry Semester Test Review 2012 Answer Key
  - Setting Reading Goals Chemistry Semester Test Review 2012 Answer Key
  - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Chemistry Semester Test Review 2012 Answer Key
  - Fact-Checking eBook Content of Chemistry Semester Test Review 2012 Answer Key
  - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

### 14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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