

# CHEMISTRY I - 1st SEMESTER EXAM REVIEW

**STRATEGY:** Start by reading through your notes to refresh your memory on these topics. Then, use this review sheet as a starting point to identify the areas on which you need to spend more study time. For those areas, go back to homework assignments, quizzes, and reviews to practice more problems. I would also recommend going through the website links of tutorials and practice quizzes.

**FORMAT:**

- + Questions will be multiple-choice.
- + A formula bank will be provided in addition to any values that you might need (electronegativity, etc.), but you will NOT be given "formulas" for items listed in the VOCAB sections (average atomic mass, % error, etc.).

## Atomic Structure – Ch. 3

1. Identify the scientists who made the following discoveries.
  - a. Atoms contain negative particles called electrons.
  - b. The mass of an electron is  $9.11 \times 10^{-28}$  g.
  - c. Atoms contain neutral particles called neutrons.
  - d. Atoms contain a dense, positive nucleus.
  - e. Atoms are indivisible and resemble billiard balls.
2. Describe the evolution of the atomic model from the billiard ball model to the electron cloud model.
3. Write the isotope symbol, including atomic number & mass number, for the following isotopes.
  - a. carbon-14                      c. nickel-63
  - b. chromium-53                d. zirconium-92

4. Complete the table for the following isotopes.

Symbol	Zn			
Atomic #		20		
Mass #	65		74	40
# of protons			34	
# of neutrons		21		
# of electrons				18

5. Calculate the average atomic mass of copper if 69.17% of the copper atoms occurring in nature are  $^{63}\text{Cu}$  and 30.83% are  $^{65}\text{Cu}$ .

**VOCAB:** isotope                      average atomic mass  
mole

## Matter – Ch. 1

6. Classify the following substances as *solid, liquid, gas, or plasma* based on their properties.
  - a. flexible volume, high KE, particles can disperse freely.
  - b. flexible volume, very high KE, particles are charged.
  - c. fixed volume, very low KE, orderly particles.
  - d. fixed volume, low KE, particles can move past each other.
7. Compare and contrast a solution, colloid, and suspension.
8. Classify the following as element, compound, heterogeneous mixture, or solution.
  - a. graphite (carbon)
  - b. grape juice
  - c. table salt (NaCl)
  - d. pepper
9. Classify the following as *chemical or physical changes*.
  - a. cutting wire
  - b. ripening tomato
  - c. apple slices turning brown
  - d. compressing a gas
10. Classify the following properties as *physical or chemical*.
  - a. melts at  $68.0^\circ\text{C}$
  - b. corrosive
  - c. reacts violently with water
  - d. decomposes in air
  - e. magnetic

**VOCAB:** kinetic molecular theory  
law of definite composition  
law of multiple proportions

## Measurement – Ch. 2

11. In a lab, the average measured density for Pre-1982 pennies was  $7.98 \text{ g/cm}^3$ . Given that the literature value for the density is  $8.92 \text{ g/cm}^3$ , calculate the percent error.
12. How many sig figs are in the following numbers?
  - a. 2.35                              c. 89.70
  - b. 34,000                          d. 0.0052
13. Convert the following numbers into or out of scientific notation.
  - a. 548,000                          c.  $1.200 \times 10^{-3}$
  - b. 0.0000770                      d.  $9.25 \times 10^7$
14. Osmium is the densest element with a density of  $22.57 \text{ g/cm}^3$ . Find the mass of a  $56.2 \text{ cm}^3$  sample of osmium.
15. Perform the following SI prefix conversions.
  - a.  $65.2 \text{ mm} = ? \text{ dm}$                       c.  $65,000 \mu\text{L} = ? \text{ mL}$
  - b.  $2.3 \text{ kg} = ? \text{ g}$                               d.  $0.502 \text{ km} = ? \text{ cm}$
16. How many milliliters are in a 2.0 quart jug of milk?
17. Mrs. J. spent last weekend grading lab reports. If she spent 5.5 min on each lab, how many hours did it take her to grade all 95 labs?
18. Calculate the density from the slope of a "Mass vs. Volume" graph.
19. Record the appropriate # of SigFigs when measuring.

**VOCAB:** accuracy vs. precision

## Electrons in Atoms – Ch. 4 & 5

20. Calculate the wavelength if the frequency is  $2.5 \times 10^8 \text{ Hz}$ .
21. Find the energy of a photon if frequency is  $7.31 \times 10^{14} \text{ Hz}$ .
22. Describe how Bohr's model explains the bright lines (red, green, violet, violet) in the emission spectrum of hydrogen.
23. What is the primary difference between the modern model of the atom and Bohr's model?
24. Draw orbital diagrams for the following elements.

Symbol	Atomic #	Orbital Diagram
F		
V		

25. Explain why chromium's electron configuration is  $[\text{Ar}] 4s^1 3d^5$  instead of the expected configuration of  $[\text{Ar}] 4s^2 3d^4$ .

# Chemistry 1st Semester Exam Study Guide

**Great Britain. Admiralty**



## **Chemistry 1st Semester Exam Study Guide:**

*Directory of Distance Learning Opportunities* Modoc Press, Inc.,2003-02-28 This book provides an overview of current K 12 courses and programs offered in the United States as correspondence study or via such electronic delivery systems as satellite cable or the Internet The Directory includes over 6 000 courses offered by 154 institutions or distance learning consortium members Following an introduction that describes existing practices and delivery methods the Directory offers three indexes Subject Index of Courses Offered by Level Course Level Index Geographic Index All information was supplied by the institutions Entries include current contact information a description of the institution and the courses offered grade level and admission information tuition and fee information enrollment periods delivery information equipment requirements credit and grading information library services and accreditation *Resources in Education* ,1984 **Revise Gcse**

**Religious Studies** Catherine Lane,2005 New editions of the bestselling Revise GCSE Study Guides with a fresh new look and updated content in line with curriculum changes Revise GCSE contains everything students need to achieve the GCSE grade they want Each title has been written by a GCSE examiner to help boost students learning and focus their revision Each title provides complete curriculum coverage with clearly marked exam board labels so students can easily adapt the content to fit the course they are studying Revise GCSE is an ideal course companion throughout a student s GCSE study and acts as the ultimate Study Guide throughout their revision **AQA Mathematics** Bob Hartman,2006 Written by examiners and practising teachers this work offers study and homework support throughout GCSE It is useful as a reference source a lesson back up and a revision guide

**Nursing School Entrance Exam Review** William H. Brown,Frederick A. Bettelheim,Jerry March,2004-04 **Revise GCSE Physical Education (2010 Exams Only)** Don E. Webster,2005 New editions of the bestselling Revise GCSE Study Guides with a fresh new look and updated content in line with curriculum changes Revise GCSE contains everything students need to achieve the GCSE grade they want Each title has been written by a GCSE examiner to help boost students learning and focus their revision Each title provides complete curriculum coverage with clearly marked exam board labels so students can easily adapt the content to fit the course they are studying Revise GCSE is an ideal course companion throughout a student s GCSE study and acts as the ultimate Study Guide throughout their revision **Mathematics** Peter Sherran,2004 The Revise A2 study guides updated with 2006 specifications are written by examiners and contain in depth course coverage of the key information plus hints tips and guidance End of unit sample questions and model answers provide essential practice to improve students exam technique **EC Study Guide to**

**Environment-related Courses** Institute for European Environmental Policy,Commission of the European Communities. Directorate-General Environment, Nuclear Safety and Civil Protection,1993 Clerk, CAF-1 Through CAF-4 David Reuben Turner,1948 Matriculation mathematics, a guide (by the tutors of the London intermediate correspondence classes). (Lond. univ. exams.). London univ. corresp. coll,1889 Intermediate English, 1889-(1898). Questions on set subjects

London univ, exam. papers,1888      **Cliffs Texas Academic Skills Program preparation guide** Jerry Bobrow,Robert  
 Dixon-Kolar,Peter Z. Orton,1989      *Florida Schools* ,1964      **The Midland Druggist and Pharmaceutical Review** ,1911  
     Midland Druggist and the Pharmaceutical Review ,1911      **Complete Preparation for the AHPAT, 1999** Williams &  
 Wilkins Review,1998-04 Here is the most accurate and complete resource designed for students interested in applying for  
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Regulation of the Practice of Medicine in the United States and Canada ,1891      **The Pharmaceutical Era** ,1892      The  
Publishers' Trade List Annual ,1899      *The Navy List* Great Britain. Admiralty,1889

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