

*You can predict the behavior of an element from its position in the periodic table.*

**CHEAT SHEET**

To help you study you may develop a handwritten, single-page, single-sided cheat sheet which you can use during the exam. To write this, review your class notes, worksheets, textbook, and this study guide. Distill your notes, then organize your thoughts into 1 page (8½ x 11 inch) that you can bring to the exam.

This cheat sheet must satisfy these requirements

- have your name on it
- handwritten
- single sided
- handed in as part of the exam.

**EXAM STRUCTURE**

The exam consists of

- 100 multiple choice questions plus
- one essay question.

**WHAT TO STUDY**

Concepts and chapters covered by the final exam's multiple choice questions:

**A. Scientific Measurement**

- Scientific notation
- Significant figures
- Significant figures in calculations

**B. Conversion Problems**

Use conversion factors to change between units  
Set up problems as we did on the quantities exam

**C. Atomic Structure - chapter 4**

- Properties of subatomic particles
- Atomic number, mass number, isotopes
- Calculate average atomic mass
- Relative abundance
- Significance of superscripts and subscripts when before symbol of element, such as  $^{14}_6\text{C}$ .

**D. Electrons in Atoms - chapter 5**

- Bohr model, energy levels, atomic orbital
- Types of sublevels (a.k.a. sub shell): s,p,d,f
- Electron configurations
- Aufbau principle, Pauli exclusion principle, and Hund's rule
- Be able to write the electron configuration for any element or ion (aside from those with f-sublevels)

**E. The Periodic Table - chapter 6**

- Mendeleev and Moseley: who are they and why are they famous

- Periodic law - what is it?
- Know how to read periodic table: identify periods vs. groups, identify alkali and alkaline earth metals, representative elements, transition metals, halogens, and noble gases.
- Periodic trends and group trends: atomic size, ionic radii, ionization energy, electronegativity
- Shielding
- Effective nuclear charge

**F. Ionic and Metallic Bonding - chapter 7**

- Valence electrons
- Anions and cations
- Octet rule
- Charge and electron configuration resulting when an element gains or loses electrons
- Physical and chemical characteristics
- Formula unit

**G. Covalent Bonding - chapter 8 (skip 8.3)**

- Covalent bond
- Molecule
- Molecular compound
- Molecular formula
- Diatomic molecule
- Single, double, triple bonds
- Coordinate covalent bond
- Unshared pair of electrons
- Poly atomic ion
- Resonance structure
- *Skip: bond dissociation energy*
- *Skip: section 8.3*
- Non polar and polar covalent bonds
- Polar molecules
- Be able to identify, name, and differentiate between: ionic compounds, molecular compounds, and metals.

**H. Chemical Names and Formulas - chapter 9**

- Mono atomic ions
- Transition metal ions
- Halogen ions (halides)
- Names and formulas of binary ionic compounds and compounds with poly atomic ions
- Naming transition metals and the use of Roman numerals to show metal's charge
- Names and formulas of binary covalent molecules
- Greek prefixes in covalent compounds
- *Skip: naming of acids and bases*
- *Skip: law of definite and multiple proportions*