

Bauck's CHEMISTRY Ch. 4 Test Review *This is an optional assignment due the day of the test.*

Materials: loose leaf paper, pen and/or pencil, calculator (You will be given a periodic table.)
Test date: _____
Test value: 200 points
Test format: multiple choice, short answer essays, math problems, electron configurations

One section:

- a) Write the element name _____.
- b) Write the **CONDENSED** (**ABRIDGED**, **NOBLE GAS**) electron configuration.
- c) Write the **VALENCE** electron configuration.
- d) Draw the **VALENCE** orbital notation "boxes, labeled and filled with arrows."

One section:

- a) Write the **COMPLETE** electron configuration and underline the valence parts.
- c) Write how many electrons are in the valence shell.
- d) Write how many electrons are in each energy level. List in order.

Equations given on test: $c = \lambda \nu$ $E = h \nu$

Constants given on the test: $c = 3.00 \times 10^8 \text{ m/s}$ $h = 6.626 \times 10^{-34} \text{ Js}$

TOPICS TO STUDY:

- 1) **Antiparallel spin**—What is this? What is its importance to electrons in "shells"?
- 2) **Aufbau diagram**—What is this? Contrast to electron configurations using the periodic table.
(NOTE: There will be no Aufbau diagram available on the test.)
- 3) **Electron configuration**—What is it? How is it done with the periodic table? Give an example of the following:
 - a) **Complete electron configurations**
 - b) **Condensed/abbreviated/Noble Gas electron configurations**
 - c) **Valence electron configurations**
 - d) **Orbital notation (valence orbital "boxes")**Choose an element and give an example of a-d for this review.
- 4) **em**— What does this mean?
- 5) **em spectrum**—List the types of waves in order from low to high energy.
- 6) **Excited state**—What is this? Contrast with ground state.
- 7) **Ground state**—What is this?
- 8) Summarize the **Heisenberg Uncertainty Principle**.
- 9) **Orbitals**—What are they? Give one example of a correct orbital designation, such as 3s. Give one example of an incorrect orbital designation, such as 1f.
- 10) **Principal energy level (n)**—What is this?
- 11) **Quantum**—What is this?
- 12) Symbols—What do the following mean? **c, λ , E, h, ν** (Greek nu), **ν** (letter v)
- 13) **Sublevels**—What are they? What shapes can they be? What four letters are assigned to them?
- 14) **Superscript** vs. exponent—Which is used in electron configurations?
- 15) **Valence**—What is it? How does it relate to electron configurations?
- 16) **Wave equations**—Give an example of solved math problems for this review:
 - a) $c = \lambda \nu$
 - b) $E = h \nu$
- 17) **Waves**— Draw and label the parts of a wave:
 - a) **origin**
 - b) **crest**
 - c) **trough**
 - d) **amplitude**
 - e) **wavelength**
- 18) **Wave-particle duality of nature**—Explain what this means.

*** Note *** There will be at least one question pertaining to material in past chapter(s) or unit(s).