**Unit 3 Review Sheet**

I. Electrons and Light

1. There are two equations that we have used concerning light and

energy:

**E = hv c = λv**

(1.) What does E stand for?

(2.) What does h stand for and what is it's value?

(3.) What does v stand for?

(4.) What does c stand for and what is it's value?

(5.) What does λ stand for?

2. Sample problems:

(1.) What is the wavelength of light with the frequency of 1.81 × 1014

Hz?

(2.) What is the frequency of light with the wavelength 6.80 x 10-10 m?

(3.) What is the energy of light with the frequency 2.92 x 1015 Hz?

(4.) A certain light has the wavelength 9.23 x 10-10 m, what is the

frequency?

(5.) What is the energy of light with a frequency of 1.34 x 1011 Hz?

II. Electron configurations

-- What does the Aufbau principle state? Hund’s Rule? Pauli Exclusion

principle?

Assign electron configurations to the following elements:

Ca\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fe\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

U \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

W \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rb\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cu\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sr\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Determine the noble gas abbreviated electron configurations for the

following elements and draw their orbital diagrams. How many unpaired

electrons does each element have?

F \_\_\_\_\_\_\_\_\_\_\_\_\_\_ O \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Na\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Be\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mg\_\_\_\_\_\_\_\_\_\_\_\_\_\_ N \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Al\_\_\_\_\_\_\_\_\_\_\_\_\_\_ P\_\_\_\_\_\_\_\_\_\_\_\_\_\_

III. Periodic Trends

**\*\*\*Be able to explain each trend in terms of effective nuclear charge**

**and atomic radius as appropriate!!\*\***

1. What is the periodic trend for atomic radius?

Sample Questions:

Which of the following has the **largest** atomic radius?

K or Ca N or F Al or Cl

Li or K Ca or Ba F or I

V or Ni Zr or Cd Mn or Re

B or In Rb or Te Li or Cs

2. What is the periodic trend for ionization energy?

Which of the following has the **largest** ionization energy?

Li or Cs K or V B or Ga

Cs or Po F or I B or F

Be or Ba C or Sn N or Sb

Mo or Ag Al or Cl Li or F

3. What is the periodic trend for electronegativity?

Which of the following has the **smallest** ionization energy?

Ca or K F or N Cl or Al

K or Li Ba or Ca I or F

Ni or V Cd or Zr Mn or Re

In or B Te or Rb Cs or Li