

You should be able to:

Chapter 6

- State the trends in atomic radius and explain why this trend exists in terms of the effective nuclear charge and electronic structure of the element.
- Explain what happens to the radius of an atom when it forms its most common ion.
- Use the number of valence electrons in an element to determine the charge that it obtains when it forms an ion (gains or loses electrons).
- Explain what ionization energy and electronegativity are.
- State the trends in ionic radius, ionization energy, and electronegativity and explain them in terms of the trend in atomic radius.

Chapter 7

- Identify the alkali metals (group 1 or IA) and alkaline earth metals (group 2 or IIA)
  - Explain why the alkali metals are so reactive and what charge their ions have.
  - State what is special about how carbon bonds and name the 3 allotropes (2 mentioned in the book and the 3rd mentioned in class) of carbon.
  - Recall (elements lab) that phosphorous has 3 allotropes
  - Name the two allotropes of oxygen and state the charge on the ions of the oxygen (group 16, VIA) elements.
  - State what 3 elements are the most important to life on Earth.
  - Recall the name of the group 17 (VIIA) elements. Explain why these are very reactive nonmetals. State the charge on the ions of these elements.
  - State the name of the group 18 (VIIIA) elements and why they are called this. Explain why they were so difficult to discover.
  - Explain why transition metal atoms have more than one possible ion and determine either the electron configuration of the ion or its charge given the other.
  - Explain what ferromagnetism is and why certain transition metals exhibit it.
  - Explain why many transition metal compounds have color.
  - Recall that another name for the Inner Transition Metals is the “Rare Earth Metals” and what the names of the two rows are (Lanthanoids & Actinoids).
- Note: you will get a “special” version of the Periodic table with the legend removed. You will not get the page with Electronegativity—you must recognize and use trends.
- Chapter 6 Assessment Problems pp. 174-175 #41, 42, 43, 44, 46, 48, 52, 55, 56, 57, 59, 60, 61, 63, 64, 65, 66, 67.
  - Chapter 7 Assessment Problems pg. 206-207 #28, 30, 32, 35, 36, 39, 40, 41, 42, 48, 49, 53, 54

Additional Problems

1. For each of the following main group elements, indicate the symbol, with charge, of its most stable ion and the electron configuration of the ion:

Element	Symbol	e <sup>-</sup> Config of Ion	Element	Symbol	e <sup>-</sup> Config of Ion
a. Al			b. S		
c. As			d. Ca		

2. For the following transition metal ion, indicate the electron configuration of the element and of the ion:

Ion	Electron Configuration of Element	# e <sup>-</sup> lost	Electron Configuration of Ion
Co <sup>2+</sup>			
Nb <sup>4+</sup>			
V <sup>3+</sup>			

3. Given the following transition metal and the electron configuration of its ion, indicate the electron configuration of the *neutral element* and determine the ion and its charge:

Element	Electron Config of Element	Electron Config of Ion	# e <sup>-</sup> lost	Symbol w/Charge
Ni		[Ar] 3d <sup>6</sup>		
Zr		[Kr]		
Tc		[Kr] 4d <sup>2</sup>		