

WORKSHEET #2

CHAPTER 6: 6.8 – 6.9

Name: _____ Per: _____ Date: _____

6.8 Electron Configurations

6.9 Electron Configurations and the Periodic Table

- The _____ describes the way electrons are distributed among the orbitals of an atom by listing each energy shell, subshell and number of electrons in each orbital systematically from the lowest energy level to the highest energy level of any given atom. An _____ diagram is a similar representation however it displays the pairing or non pairing of electrons in each orbital.
- To write the short cut of either version above, simply go back to the nearest _____, place the element's symbol in brackets and continue the notation to completion. The abbreviated versions do not list the _____ electrons. The _____ of an element are those electrons in the outermost shell. Write only the valence electrons in the following abbreviated electron configuration for lead: Pb [Xe] 6s²4f¹⁴5d¹⁰6p²:

- The lowest energy distribution of electrons is an atom's _____. It has been experimentally shown that it is lower in energy for electrons occupying orbitals of equal energy to spread out over available orbitals one at a time before any electron begins to pair up with another electron. This is called _____.
- Draw the full orbital diagram noting each energy level, subshell, orbital and electron paired or unpaired for Arsenic:
- Write the full electron configuration for Arsenic: _____.
Write the abbreviated electron configuration for Arsenic: _____.
- A phenomenon that has some important consequences in terms of chemical properties is that half-filled and filled subshells have an extra degree of stability. This causes the elements _____ and _____ to have unexpected electron configurations. Write the abbreviated expected configuration and unexpected configuration of each element below:
expected: _____[] _____ unexpected: _____[] _____
_____ [] _____ _____ [] _____
- Explain why electron configurations of elements high in atomic number are difficult to predict?
- Many of the transition metal exhibit a 2+ oxidation state. Looking at the abbreviated electron configurations of any one of the transition metals can you explain why is this true?
- Explain why there is an empty space between Beryllium and Boron and Magnesium and Aluminum on the Periodic Table.
- Name the three ferromagnetic elements: _____. These are also called the _____.