Dougherty Valley HS Chemistry
Electrons
Extra Practice

Worksheet #9*

Name: **Period:** **Seat#:**

Directions: Any worksheet that is labeled with an * means it is suggested extra practice. We do not always have time to assign every possible worksheet that would be good practice for you to do. You can do this worksheet when you have extra time, when you finish something early, or to help you study for a quiz or a test. If and when you choose to do this Extra Practice worksheet, please do the work on binder paper. You will include this paper stapled into your Rainbow Packet when you turn it in, even if you didn't do any of this. We want to make sure we keep it where it belongs so you can do it later if you want to (or need to). If you did the work on binder paper you can include that in your Rainbow Packet after this worksheet. If we end up with extra class time then portions of this may turn into required work. If that happens you will be told which problems are turned into required. Remember there is tons of other extra practice on the class website…and the entire internet! See me if you need help finding practice on a topic you are struggling with.

A. Draw orbital diagrams for the following elements:

1. Phosphorus
2. Nickel
3. Bromine
4. Potassium
5. Argon

B. Draw orbital diagrams for the following elements. Write the e- config. (full, and Noble-gas notation):

1. Scandium
2. Chlorine
3. Zinc
4. Germanium
5. Aluminum
6. Titanium
7. Krypton
8. Chromium

C. Write the electron configuration (full, and in noble gas notation) for the following ions:

1. Br^{1-}	10. O^{2-}
2. Sr^{2+}	11. Pt^{4+}
3. Se^{2-}	12. Zr^{2+}
4. Al^{3+}	13. Cu^{2+}
5. Fe^{2+}	14. Fe^{3+}
6. As^{3-}	15. Mn^{2+}
7. Sn^{4+}	16. W^{+}
8. Ag^{+}	17. Mo^{3+}
9. Zn^{2+}	18. Pb^{2+}

D. Answer the following questions with full, detailed, honors level answers:

1. Explain absorption, emission, and how it relates to the flame test lab.

2. Do all atomic emissions result in energy being released? Do they all result in visible colored light being released? Explain.

3. Explain the Aufbau Principle, Hunds Rule, and Pauli Exclusion Principle, and how they relate to electron configurations.

4. Describe the two differences between a $2p_x$ orbital and a $3p_y$ orbital.

5. The electron configuration for phosphorus, written in core notation, is [Ne] $3s^2$ $3p^3$. What two things does Hund's rule tell us about the three electrons in the 3p sublevel?

6. Use the periodic table to identify the neutral atoms having the following electron configurations:

Electron Configuration	Element
[Ne] $3s^2$	
[Ar] $4s^2 3d^5$	
[Kr] $5s^2$ $4d^{10}$ $5p^3$	

7. Consider the following ions: N^{-3}, O^{-2}, F^{-1}, Na^{+1}, Mg^{+2}, and Al^{+3}
   a. How many electrons are present in each ion?
   b. Write a single electron configuration representing all the ions.
   c. Which neutral atom possesses this electron configuration?

8. Write the electron configurations for the ions below. After writing the configurations, explain which electrons are being lost in which order. Remember...we don't remove electrons in the same order we put them in!
   a. Cr^{1+}
   b. Cr^{2+}
   c. Cr^{3+}
   d. Cr^{4+}
   e. Fe^{1+}
   f. Fe^{2+}
   g. Fe^{3+}
   h. Fe^{4+}
   i. Ga^{1+}
   j. Ga^{2+}
   k. Ga^{3+}
   l. Ga^{4+}