**Quiz 7**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Answer the following questions about the electron configuration: [Ar] 3d2 4s2 (4 points):
   1. What is the name and symbol of the element? \_\_\_\_\_\_titanium, Ti
   2. How many unpaired electrons are there in the ground state of this atom? \_\_\_\_2\_\_\_\_
   3. Is this element paramagnetic or diamagnetic? \_\_\_\_\_\_\_\_paramagnetic
2. In which subshell are the highest-energy electrons in the ground-state atom of the isotope 131I? Are the electron configurations of 131 I and 127I the same (2 points)?

5p, yes

1. Which of the following group 1 elements has the largest atoms: Li, Na, K, or Rb? Explain your answer (3 points).

Rb, the size of atoms increases down a group because electrons have been added to higher n levels.

1. Which of the following elements should have the smallest second ionization energy (2 points)?

Br, Kr, Pb, Sr, Y

Sr

1. Which bond is labeled correctly (2 points)?

|  |  |  |
| --- | --- | --- |
| δ- δ+ | δ- δ+ | δ- δ+ |
| O-H | C-Cl | Br-Br |

The O-H bond is labeled correctly.

1. Draw Lewis Structures for NOF3 and POF3 in which the group 15 element is the central atom and the other atoms are bonded to it. What are the differences in bonding between these molecules (6 points)?



In POF3 there are two possible resonance structures one with a double bond between the P and O and no normal charge and the other there are only single bonds, and formal charges are present on P and O.



In NOF3 there are only single bonds, and formal charges are present on N and O.

1. Is this week’s experiment a wet lab or a dry lab (1 point)? \_\_\_dry lab\_\_\_\_\_\_\_\_\_