1. What does the superscripted number in an electron configuration represent?
   1. Number of electrons
   2. Energy level
   3. Orbital type
   4. Number of sublevels
2. What is the electron configuration for oxygen?
   1. 1s22s23p4
   2. 1s22p4
   3. 1s22s22p4
   4. 1s22p6
3. Which element has the electron configuration 1s22s22p63s23p64s1?
   1. Rubidium
   2. Sodium
   3. Calcium
   4. Potassium
4. Which element has the electron configuration 1s22s22p63s23p1?
   1. Aluminum
   2. Boron
   3. Sodium
   4. Gallium
5. How many electrons does an atom have with the electron configuration 1s22s22p63s23p64s23d5 contain?
   1. 3
   2. 25
   3. 7
   4. 20
6. Which orbital diagram represents a boron atom?

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1. An atom with the generic valence electron configuration ns2np4 belongs to what group?
   1. 2
   2. 4
   3. 6
   4. 14
   5. 16
2. You want to write the noble gas electron configuration for iodine. Which noble gas would be the most appropriate to use?
   1. Xe
   2. Kr
   3. Rn
   4. Ar
3. An atom with the generic valence electron configuration ns2(n-1)d3 is a \_\_\_\_\_\_\_\_\_\_.
   1. Main group metal
   2. Main group nonmetal
   3. Transition metal
   4. Post-transition metal
   5. Metalloid
4. Which orbital diagram violates all three rules: Hund’s rule, Pauli exclusion principle, and the aufbau principle?

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| 1. A close-up of a diagram     Description automatically generated | 1. A black and white image of a number     Description automatically generated with medium confidence |
| 1. A black and white text     Description automatically generated with medium confidence |  |

1. What is the full electron configuration for Ti2+?
   1. 1s22s22p63s23p64s23d2
   2. 1s22s22p63s23p64s2
   3. 1s22s22p63s23p6
   4. 1s22s22p63s23p63d2
2. The electron configuration for the most common ion of Cs has the same electron configuration as \_\_\_\_\_\_\_\_\_\_\_\_.
   1. Ba
   2. Xe
   3. Kr
   4. I
   5. Rn
3. In an alternate universe, each orbital can only hold one electron instead of two like in our universe. All other rules remain the same. What element would be represented by the electron configuration 1s12s12p33s13p3?
   1. F
   2. P
   3. Ar
   4. N
   5. Ne
4. Which element or ion has the largest atomic radius?
   1. Ar
   2. K+
   3. Ca2+
   4. Cl-
5. Which element has the highest first ionization energy?
   1. Cs
   2. Cl
   3. I
   4. Li
6. Which element is the most electronegative?
   1. Na
   2. I
   3. C
   4. Cl
   5. Fe
7. What affects atomic radius? Select any that apply.
   1. The number of valence electrons
   2. The atom’s atomic mass
   3. The atom’s electronegativity
   4. The number of protons
   5. The number of neutrons
8. Why does boron have a lower ionization energy than beryllium?
   1. Beryllium has a full 2s subshell, making it very unstable.
   2. Boron has an electron in an additional sublevel, making the electron harder to remove.
   3. The 2s sublevel is higher in energy than the 2p sublevel.
   4. Boron is to the left of beryllium; ionization energy decreases across a period.
   5. Boron has a single 2p electron, which is easier to remove than one of beryllium’s electrons in a full 2s subshell.
9. An unidentified element has seven valence electrons. It is most likely a \_\_\_\_\_\_\_\_\_\_\_\_ and has a \_\_\_\_\_\_\_\_\_\_\_\_ ionization energy.
   1. Metal, low
   2. Metal, high
   3. Nonmetal, low
   4. Nonmetal, high
10. In an alternate universe, metals form anions while nonmetals form cations. Which statement is true for the alternate universe?
    1. Nonmetals have low ionization energies.
    2. Metals and nonmetals can’t form ionic compounds.
    3. Covalent compounds don’t exist.
    4. Fluorine is the most electronegative element.
    5. When metals form ions, they have the same electron configuration as the preceding noble gas.