General Chemistry CHE101
PRACTICE QUIZ 2 SUMMER 2020

1. **Each question carries equal points**

a) Which electron configuration below represents a cation/anion, example Pt^{2+}, F^-, etc.?
b) What is a possible subatomic particle composition for a species? Example ; x p^+, yn^0, ze$^-$
c) How many lobes do an orbital have (s, p, d, f, etc)?
d) Draw a picture that shows the relationship between different orbitals. Write the condensed electron configuration (i.e., $1s^2 2s^2$…) of a main group species.
e) To which category of elements does an element belong? (Circle one)
   a. Alkaline earth metals b. Inner transition metals
   c. Halogens d. Metalloids
f) Characteristics of groups & periodic of the periodic tables.

2. Define ionization energy/electron affinity/metallic character/ effective nuclear charge? Sketch the outline of the periodic table and show group and period trends for this property?

3. Define iso-electronic ions with examples? Explain why the anions are larger than the cation? Arrange the following species in isoeletronic pairs with electron configurations: O^+, Ar, S^{2-}, Ne, Zn, Cs^+, N^{3-}, As^{3+}, N, Xe, etc.

4. Describe completely all four quantum numbers used to characterize an electron in an atom with example. Or, Write down the electron configuration of an atom in the second row with a complete set of quantum numbers for each of the electrons in it.

5. Describe the shapes (boundary surfaces) of atomic orbital (Show coordinate axes in your sketches).

6. What is an energy level? Explain the difference between ground state and excited energy levels.

7. Which elements are more likely to form the types of compounds below:
   i. Acidic oxides
   ii. Basic oxides
   iii. Amphoteric oxides

8. Describe different type of element in periodic table? Give names and symbols of these elements.