

## A Few Questions for Review

1. Which is larger--K or Ca? P or As?
2. From which of the following is it harder to remove an electron? Mg or Si? Fe or Ru?
3. Which of the following holds a shared pair of electrons the tightest? S or Se? P or S?
4. Explain why P is smaller than Al. (How can it be smaller if it has more stuff in it?)
5. Why is it so difficult to remove an electron from Cl and so easy to remove one from K? (even though K has more protons)
6. What is the relationship between size and electron affinity?
7. What is the relationship between size and electronegativity?
8. Discuss trends within both periods and families for atomic size, ionic size, ionization energy, electron affinity, electronegativity, and activity. Explain why they occur.
9. Where do you find exceptions to the ionization energy trend within periods? Why do they occur?
10. Discuss the relationship between electron affinity and stability of the atom or ion.
11. Discuss the relationship between ionization energy and the stability of the atom or ion.
12. Which is more stable, Ca or  $\text{Ca}^{++}$ ? Cl or  $\text{Cl}^-$ ? Ne or  $\text{Ne}^-$ ? Discuss the proper sign for what is occurring in each of the preceding situations.
13. Where do you expect exceptions to the filling order of electrons to occur?
14. Which family would have an extremely high 3rd ionization energy relative to the second ionization energy? Why?
15. Why is the 2nd ionization energy of C significantly higher than the first ionization energy when both electrons come from the p sublevel?
16. Why don't the inert gases react?
17. Why is the first ionization energy for O less than that for N if the general trend is to increase from left to right?
18. What is a fast and easy lab test for determining different metal ion unknowns? Describe why this test works.
19.  $\text{S}^{-2}$ ,  $\text{Cl}^{-1}$ , Ar,  $\text{K}^{+1}$ , and  $\text{Ca}^{+2}$  are all isoelectronic. Does the electron labeled  $n = 3$ ,  $l = 1$ ,  $m = +1$  and  $s = +1/2$  have the same amount of energy in all of the above ions or atoms?
20. Why does the electron affinity for Mg indicate that it is less likely to form an anion than sodium?