The NEXT TO LAST PERIOD OF PERIODICITY!

1. The most important factor affecting trends within a period is:
a. change in nuclear charge b. change in number of valence electrons
c. change in the radii of electron shells d. change in shielding effect

A. Increasing protons affect the trends the "most" if shielding is not changing.

2. The largest contributing factor to the change in ionization energy within a family is :
a. nuclear charge b. valence electrons c. outer shell electrons d. shielding effect

D. Adding energy negates the addition of protons. The effective nuclear charge is diminished.

3. As the atomic numbers of halogens increase, their electronegativity:
a. decreases b. increases c. remains the same d. breaks

A. As atomic number increases, shielding increases so attraction for electrons will decrease.

4. Ions formed by the gain of an electron are always more _____ than the atom they came from.
a. stable b. unstable c. electronegative d. I can't tell because I don't know what the atom is.

D. If you add an electron to most atoms, energy is released. BUT….. adding an electron to s2 or p6 will require energy.
So…..you don't know

5. Elements within a family generally attract electrons _____with increasing atomic number.
a. more b. less c. about the same

b. b. more shielding

6. The most significant factor in determining atom size within a family is:
a. number of protons b. shielding effect c. valence electrons d. the strong force

b. Shielding……

7. What is the most probable oxidation state of Oxygen? a. -3 b. -2 c. +3 d. +4 e. +6

b. oxygen has 6 valence electrons. So it will gain 2 to get to 8.

8. You do an experiment which involves removing an electron from an atom. You make the following assumption in regard to its stability:
a. the ion is more stable b. the ion is less stable c. the stability doesn't change
d. You can't tell what happened because this statement doesn't give enough information.

b. ionization energies are always positive, so energy is always required to remove an electron.

9. The successive electrons of the **inner transition elements (lanthanide series-f sublevel)** of the sixth series occupy the _____ energy level. a. 1st b. 2nd c. 3rd d. 4th e. 5^{th}

d.… filling order 6s, 4f. n = 4

10. Which of the following elements is **least** metallic? a. O b. S c. As d. Se

a. metals lose electrons. The least likely to lose electrons is the most non-metallic. So….Oxygen is the smallest, and least likely to lose.

11. Which of the following has the **largest** atomic radius?a. Ni b.Sc c. Fe d. Zn e. Ba

e. farthest to the left, and has the most energy levels.

12. Low ionization energy is characteristic of: a. metals b. non-metals c. gases d. liquids

a. metals are larger than nonmetals, so they lose electrons easier….they are not holding as tightly to their electrons.

13. Which of the following elements is immediately preceded by an element with higher ionization energy?
a. Mg b. Al c. Si d. Cl

B. IE drops when you a new sublevel begins, or when the sublevel is 1 electron past half full.

14. Which of following pairs would have the **least** difference in electronegativity?
a. Cl and O b. K and Cl c. Ti and F d. Sn and F

a. The atoms are closest together…..

15. Which of the following trends have the same pattern as ionization energy?
a. ionic radius b. atomic radius c. electronegativity d. a and b e. none of these

c. if it is harder to remove an electron (ionization energy is increasing) then it should follow that desire to gain (or pull on electrons) would increase.

16. The energy change when a single electron is removed from an atom is called:
a. electron affinity b. electronegativity c. ionization energy d. none of these

c.

17. The greatest increase in ionization energy for the element Si comes between which two electrons?
a. 2nd and 3rd b. 3rd and 4th c. 1st and 2nd d. none of these

d. outer shell electrons can be removed relatively easily. Inner shell electrons are VERY difficult to remove. Si has 4 outer shell electrons, so the big increase would come between the removal of the 4^{th} and 5^{th}.

18. If energy is released in a process, the resulting particle is:
a. more stable b. less stable c. about the same d. irrelevant

a. energy released means there is a transition to a lower energy state…..like Vernesha falling off of the stool!

19. An element which gained energy (positive sign on ΔE) during an electron transfer:
a. gained an electron b. lost an electron c. lost a proton d. there is insufficient information to answer this question.

d. energy is gained when an electron is removed (ionization energy is always positive) and energy is gained (required) to add an electron to s2 and p6. So…..you don't what happened.

20. Which of the following elements would you expect to have a positive electron affinity?(positive sign on the energy change)
a. B b. Kr c. O d. F e. all of these ab. none of these

b. positive electron affinities occur in elements with full s2 or p6. Kr is a full p6.

21. Which element would form an ion which is isoelectronic with He and would bond with iodine in a 1:2 ratio (I is 2):
a. B b. Na c. Mg d. Be e. Al

d. since there are two I's and I gains one electron, the single atom of element x must have given two. So, Mg and Be are possibilities since they have two to give, but only Be becomes isoelectronic with He when it donates 2 electrons.