Directions: As usual – first 40 minutes without notes, with non-programmable calculator, with partner. Next 10 minutes with notes; last 25 minutes on board.

1) Complete the following periodic table using roman numerals for groups and Arabic numerals for periods.

2) Complete the above periodic table by marking the s, p, d and f blocks on the periodic table in different colors.

3) Based on your studying, as well as on the periodic table above, how many electrons does an “s” subshell hold? “p”? “d”? “f”?

4) Ba has how many protons? Electrons?

5) B has how many electrons in its valence shell?

6) Sr has how many electrons in its valence shell?
7) Write the electronic structure for Al.

8) Write the electronic structure for Be.

9) Write the electronic structure for S.

10) Write the electronic structure for Ca.

11) Write the electronic structure for the sodium ion.

12) Write the electronic structure for the chloride ion.

13) Write the electronic structure for the P^{3+} ion.

14) Write the electronic structure for the Be^{2+} ion.

15) Write the electronic structure for the fluoride ion.

16) Write the electronic structure for the H^{+} ion.
17) Using Lewis structures, draw CH₄.

18) Using Lewis structures, draw MgS.

19) Using Lewis structures, draw CCl₄.

20) Using Lewis structures, draw AlF₃.

21) Using Lewis structures, draw MgF₂.

22) The K shell consists of the 1s subshell. The maximum number of electrons the K shell (or ANY s subshell) may hold is __________ electrons.

23) The L shell consists of the 2s and 2p subshells. The maximum number of electrons the L shell may hold is __________ electrons. The maximum number of electrons ANY s subshell may hold is __________ electrons. The maximum number of electrons ANY p subshell may hold is __________ electrons. The maximum number of electrons ANY p sub-shell may hold is __________ electrons. The maximum number of electrons ANY s subshell may hold is __________ electrons. The maximum number of electrons ANY p subshell may hold is __________ electrons.

24) The M shell consists of the 3s, 3p and 3d subshells. The maximum numbers of electrons the M shell may hold is ______ electrons or ______ electrons. The maximum number of electrons ANY s subshell may hold is ______ electrons. The maximum number of electrons ANY p subshell may hold is ________ electrons. The maximum number of electrons ANY p sub-shell may hold is ______ electrons. The maximum numbers a d subshell may hold is ______ electrons. The maximum number of electrons a d sub-shell may hold is ______ electrons.

25) The N shell consists of the 4s, 4p, 4d and 4f subshells. The maximum numbers of electrons the N shell may hold is _______ electrons or _______ electrons. The maximum number of electrons ANY s subshell may hold is _______ electrons. The maximum number of electrons ANY p subshell may hold is ________ electrons. The maximum number of electrons ANY p sub-shell may hold is _______ electrons. The maximum numbers a d subshell may hold is ______ electrons. The maximum number of electrons a d sub-shell may hold is ______ electrons.
The maximum number of electrons any f subshell may hold is ______ electrons. The maximum number of electrons an f sub-shell may hold is ______ electrons.

26) In your own words explain Hund’s rule.

27) Write the electronic configuration for Questions 7-10 using the shorthand notation.

28) Using the periodic table in Questions 1 and 2 as your guide, develop a “fill diagram” of the order in which the subshells fill with electrons on the space, below.
29) Explain the difference between a continuous spectrum and a line spectrum. Give an illustratory example of each, i.e., I’m not asking you to memorize the line spectrum for a specific element or ion, rather to use some artistic license in explaining the differences between the two.

30) Using the diagram (illustration) on p. 24 of this reading section, explain, describe and illustrate the Lyman, Balmer and Paschen series of light emission from atoms. HINT: you may wish to go to the library and use some textbooks or Google it. You MUST use your own words for your response. HINT: you may wish to complete this specific question prior to class tomorrow (use the space on the back if you need it, as well).