GLY 4200C NAME_____
HOMEWORK 2

Periodic Table and Quantum Numbers

1. List the complete electronic configuration of each of the following. You may use [ ] around an inert gas element symbol to indicate the electrons up to and including that element.

A. Fe^{2+} [Ar] $3d^6$

B. Fe^{3+} [Ar] $3d^5$

C. Si^{4+} [Ne]

D. Cl^{-1} [Ne] $3s^2$ $3p^6$

E. N^{5+} [He]

2. List five species (ions or atoms) with the electronic configuration

$1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^6$ $3d^{10}$ $4s^2$ $4p^6$

Se^{2-}

Br^{1-}

Kr

Rb^{1+}

Sr^{2+}

3. What type of orbital (s, p, d, or f) are being filled across the first, second, and third transition series? d orbitals

4. What type of orbitals are being filled across the rare earth elements and the actinides? f orbitals

5. Give a general description of the valance electrons for each of the indicated columns of the periodic table. See example. (Be sure to use a modern table - column designations have changed).

Column	Valance configuration
EX. Alkali Metals	ns^1, n = 1 to 7
Alkaline earths	ns^2, n = 2-7
Halogens	$ns^2\ np^5$, n=2-6
Group 13 (boron elements)	$ns^2\ np^1$, n=2-6

6. List the valence electrons of the following species.

A. Mg $3s^2$

B. Ga $4s^2\ 4p^1$

C. S $3s^2\ 3p^4$

D. F $2s^2\ 2p^5$

E. Co $3d^7\ 4s^2$

7. How many electrons can each of the following subshells hold?

A. 4s 2

B. 4d 10

C. 3p 6

D. 5f 14