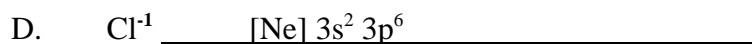
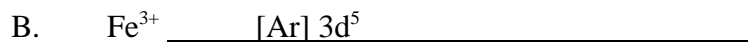
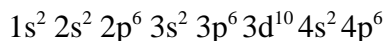


### Periodic Table and Quantum Numbers

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.



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



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 valence 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	$ns^1, n = 1 \text{ to } 7$
Alkaline earths	<u><math>ns^2, n = 2-7</math></u>
Halogens	<u><math>ns^2 np^5, n=2-6</math></u>
Group 13 (boron elements)	<u><math>ns^2 np^1, n=2-6</math></u>

6. List the valence electrons of the following species.

A. Mg	<u><math>3s^2</math></u>
B. Ga	<u><math>4s^2 4p^1</math></u>
C. S	<u><math>3s^2 3p^4</math></u>
D. F	<u><math>2s^2 2p^5</math></u>
E. Co	<u><math>3d^7 4s^2</math></u>

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

A. 4s	<u>2</u>
B. 4d	<u>10</u>
C. 3p	<u>6</u>
D. 5f	<u>14</u>