Key

Electron Configurations

1. Write the electron configuration for each element.

Mg

$1s^2\ 2s^2\ 2p^6\ 3s^2$ or $[Ne]\ 3s^2$

S

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$ or $[Ne]\ 3s^2\ 3p^4$

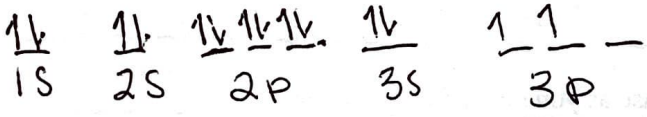
Ga

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

or $[Ar]\ 4s^2\ 3d^{10}\ 4p^1$

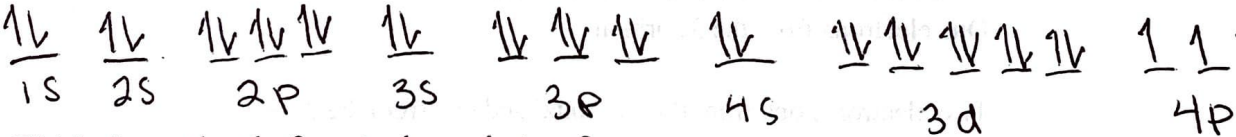
2. Write an orbital diagram for silicon

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$ } electron config



3. Write an electron configuration for arsenic based on its position in the periodic table.

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



4. Which element has the fewest valence electrons?

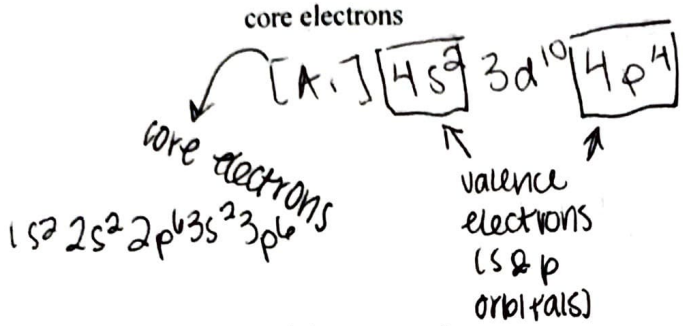
B	Ca	O	K	Ga
3	2	6	1	3

5. Which subshells are in the $n = 3$ principal shell?
   s subshell (only)

   s and p subshells (only)

   s, *p*, and *d* subshells (only)

6. Write an electron configuration for selenium and identify the valence electrons and the core electrons



7. Which property decreases as you move down a column in the periodic table?
   Atomic Size

   Ionization Energy

   Metallic Character

   None of the above, all increase as you move down a column.

8. When aluminum forms an ion, it loses electrons. How many electrons does it lose, and which orbitals do the electrons come from?
   One electrons from the 3*s* orbital

   Two electrons: one from the 3*s* orbital and one from the 2*s* orbital

   Three electrons: two from the 3*s* orbital and one from the 3*p* orbital

   Five electrons from the 3*p* orbital