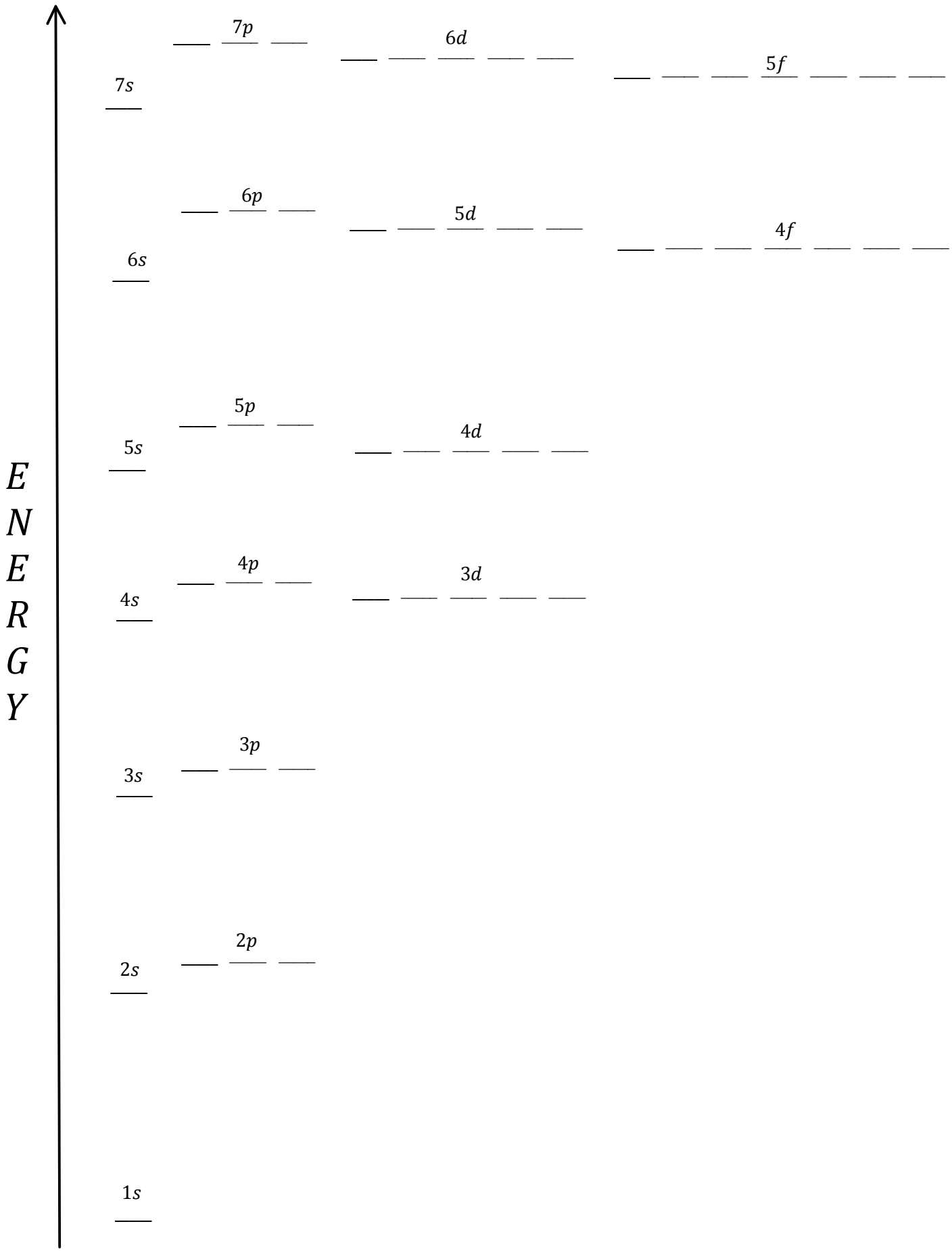
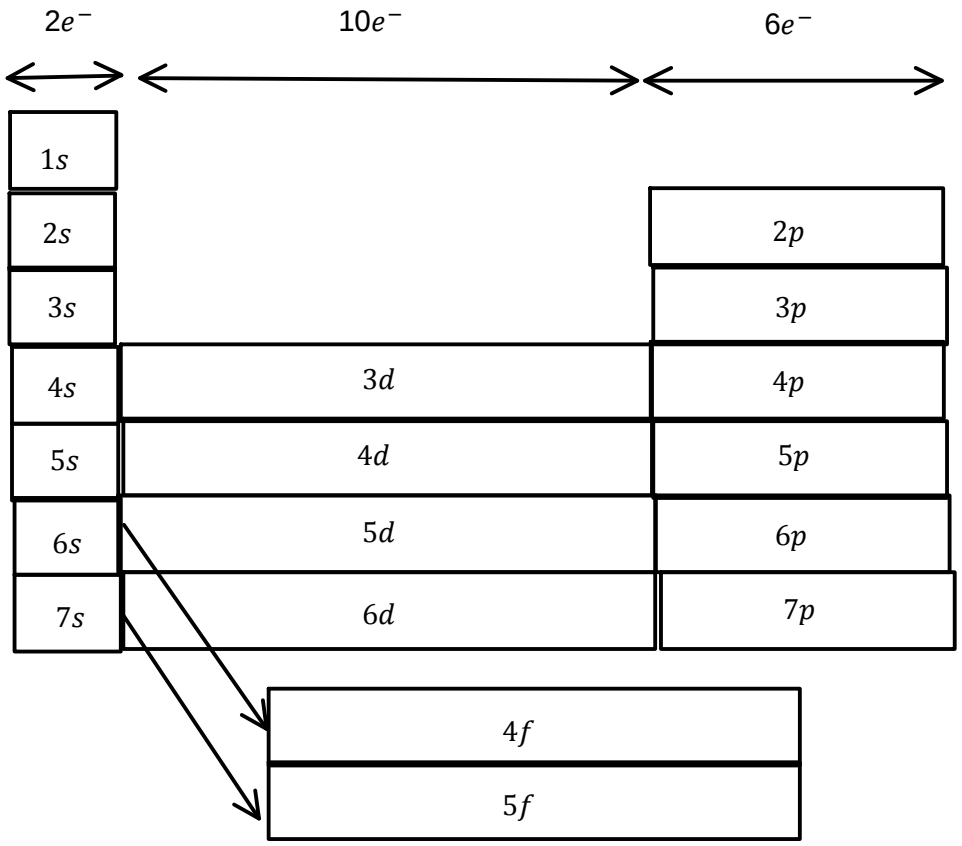
C11 - 4.2 - Energy Level Table Notes



C11 - 4.2 - Electron Configuration Table Notes



C11 - 4.2 - Electron Configuration Notes

The exponent is the number of electrons on that level

Electron Configuration:

A maximum of two electrons can be put in each orbital (blank)

$H\ (1s^1)$ $Li\ (1s^22s^1)$ $B\ (1s^22s^22p^1)$ $Na\ (1s^22s^22p^63s^1)$ $Al\ (1s^22s^22p^63s^23p^1)$

$He\ (1s^2)$ $Be\ (1s^22s^2)$ $C\ (1s^22s^22p^2)$ $Mg\ (1s^22s^22p^63s^2)$ $Si\ (1s^22s^22p^63s^23p^2)$

$N\ (1s^22s^22p^3)$ $P\ (1s^22s^22p^63s^23p^3)$

$O\ (1s^22s^22p^4)$ $S\ (1s^22s^22p^63s^23p^4)$

$F\ (1s^22s^22p^5)$ $Cl\ (1s^22s^22p^63s^23p^5)$

$Ne\ (1s^22s^22p^6)$ $Ar\ (1s^22s^22p^63s^23p^6)$

$K\ (1s^22s^22p^63s^23p^64s^1)$ $Sc\ (1s^22s^22p^63s^23p^64s^23d^1)$

$Ca\ (1s^22s^22p^63s^23p^64s^2)$ $Ti\ (1s^22s^22p^63s^23p^64s^23d^2)$

$V\ (1s^22s^22p^63s^23p^64s^23d^3)$

$Cr\ (1s^22s^22p^63s^23p^64s^13d^5)$ $4s^23d^4 \longrightarrow 4s^13d^5$

$Mn\ (1s^22s^22p^63s^23p^64s^23d^5)$

$Fe\ (1s^22s^22p^63s^23p^64s^23d^6)$

$Co\ (1s^22s^22p^63s^23p^64s^23d^7)$

$Ni\ (1s^22s^22p^63s^23p^64s^23d^8)$

$Cu\ (1s^22s^22p^63s^23p^64s^13d^{10})$ $4s^23d^9 \longrightarrow 4s^13d^{10}$

$Zn\ (1s^22s^22p^63s^23p^64s^23d^{10})$

$Ga\ (1s^22s^22p^63s^23p^64s^23d^{10}4p^1)$

$Ge\ (1s^22s^22p^63s^23p^64s^23d^{10}4p^2)$

$As\ (1s^22s^22p^63s^23p^64s^23d^{10}4p^3)$

$Se\ (1s^22s^22p^63s^23p^64s^23d^{10}4p^4)$

$Br\ (1s^22s^22p^63s^23p^64s^23d^{10}4p^5)$

$Kr\ (1s^22s^22p^63s^23p^64s^23d^{10}4p^6)$

C11 - 4.2 - Core Notation Notes

Full Notation:	*Core Notation*:
$H\ (1s^1)$	$H\ (1s^1)$
$He\ (1s^2)$	$He\ (1s^2)$
$Li\ (1s^2 2s^1)$	$Li\ ([He]2s^1)$
$Be\ (1s^2 2s^2)$	$Be\ ([He]2s^2)$
$B\ (1s^2 2s^2 2p^1)$	$B\ ([He]2s^2 2p^1)$
$C\ (1s^2 2s^2 2p^2)$	$C\ ([He]2s^2 2p^2)$
$N\ (1s^2 2s^2 2p^3)$	$N\ ([He]2s^2 2p^3)$
$O\ (1s^2 2s^2 2p^4)$	$O\ ([He]2s^2 2p^4)$
$F\ (1s^2 2s^2 2p^5)$	$F\ ([He]2s^2 2p^5)$
$Ne\ (1s^2 2s^2 2p^6)$	$Ne\ ([He]2s^2 2p^6)$
$Na\ (1s^2 2s^2 2p^6 3s^1)$	$Na\ ([Ne]3s^1)$
$Mg\ (1s^2 2s^2 2p^6 3s^2)$	$Mg\ ([Ne]3s^2)$
$Al\ (1s^2 2s^2 2p^6 3s^2 3p^1)$	$Al\ ([Ne]3s^2 3p^1)$
$Si\ (1s^2 2s^2 2p^6 3s^2 3p^2)$	$Si\ ([Ne]3s^2 3p^2)$
$P\ (1s^2 2s^2 2p^6 3s^2 3p^3)$	$P\ ([Ne]3s^2 3p^3)$
$S\ (1s^2 2s^2 2p^6 3s^2 3p^4)$	$S\ ([Ne]3s^2 3p^4)$
$Cl\ (1s^2 2s^2 2p^6 3s^2 3p^5)$	$Cl\ ([Ne]3s^2 3p^5)$
$Ar\ (1s^2 2s^2 2p^6 3s^2 3p^6)$	$Ar\ ([Ne]3s^2 3p^6)$
$K\ (1s^2 2s^2 2p^6 3s^2 3p^6 4s^1)$	$K\ ([Ar]4s^1)$
$Kr\ (1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6)$	$Kr\ ([Ar]4s^2 3d^{10} 4p^6)$
$Rb\ (1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1)$	$Rb\ ([Kr]5s^1)$

C11 - 4.2 - Ions Electron Configuration Notes

$Negative\ Ions$:

O ($[He]2s^2 2p^4$) + $2e^-$ $\longrightarrow$ O^{2-} ($[He]2s^2 2p^6$)

Cl ($[Ne]3s^2 3p^5$) + $1e^-$ $\longrightarrow$ Cl^- ($[Ne]3s^2 3p^6$)

$Positive\ Ions$: $Remove 'p' before 's' before\ 'd'$

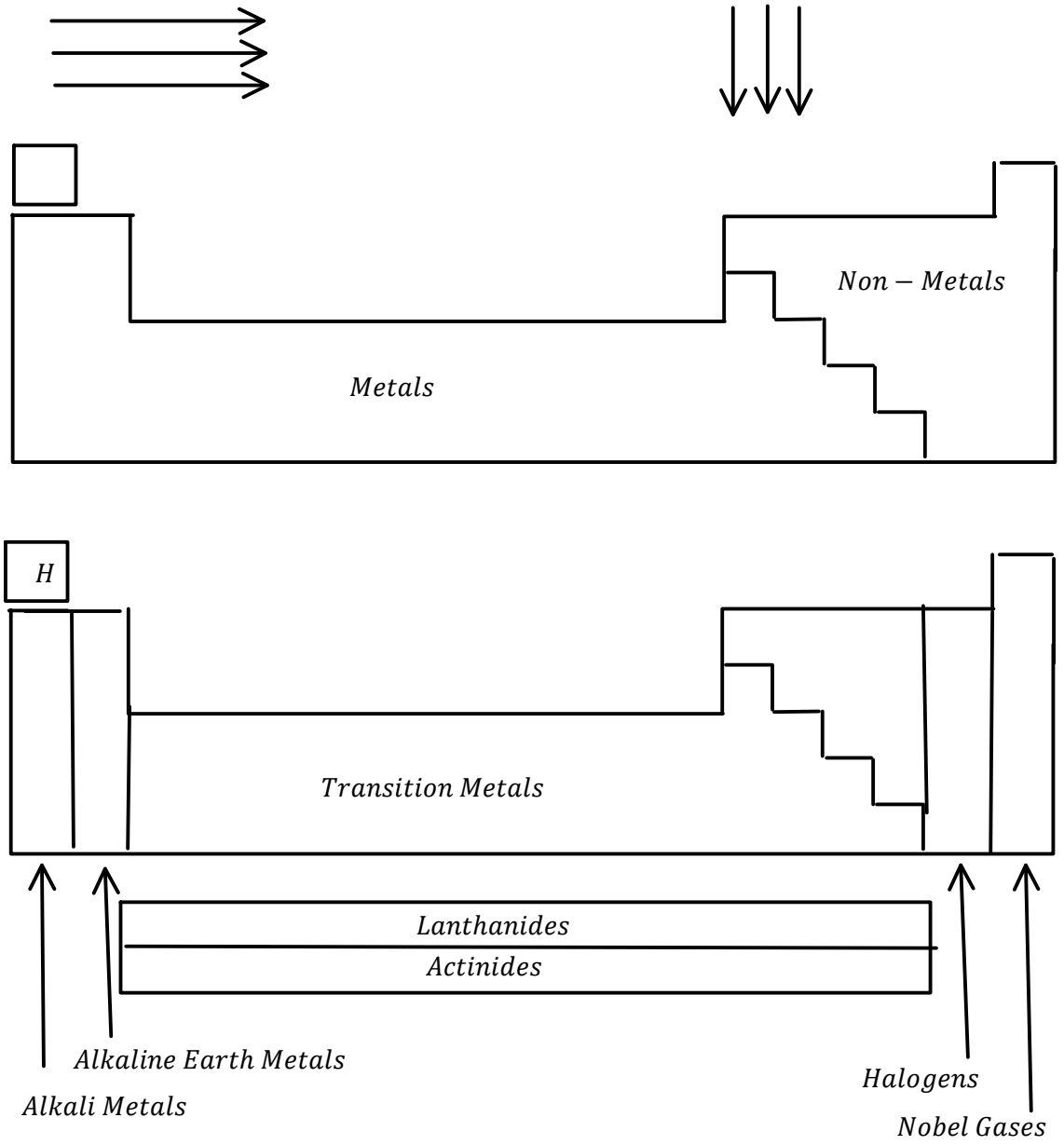
Sn ($[Kr]5s^2 4d^{10} 5p^2$) $- 2e^-$ $\longrightarrow$ Sn^{2+} ($[Kr]5s^2 4d^{10}$)

Sn ($[Kr]5s^2 4d^{10} 5p^2$) $- 4e^-$ $\longrightarrow$ Sn^{4+} ($[Kr]4d^{10}$)

C11 - 4.3 - Periodic Table Notes

Period: *Elements in a row*

Group or Family: *Elements in a column*



Definitions:

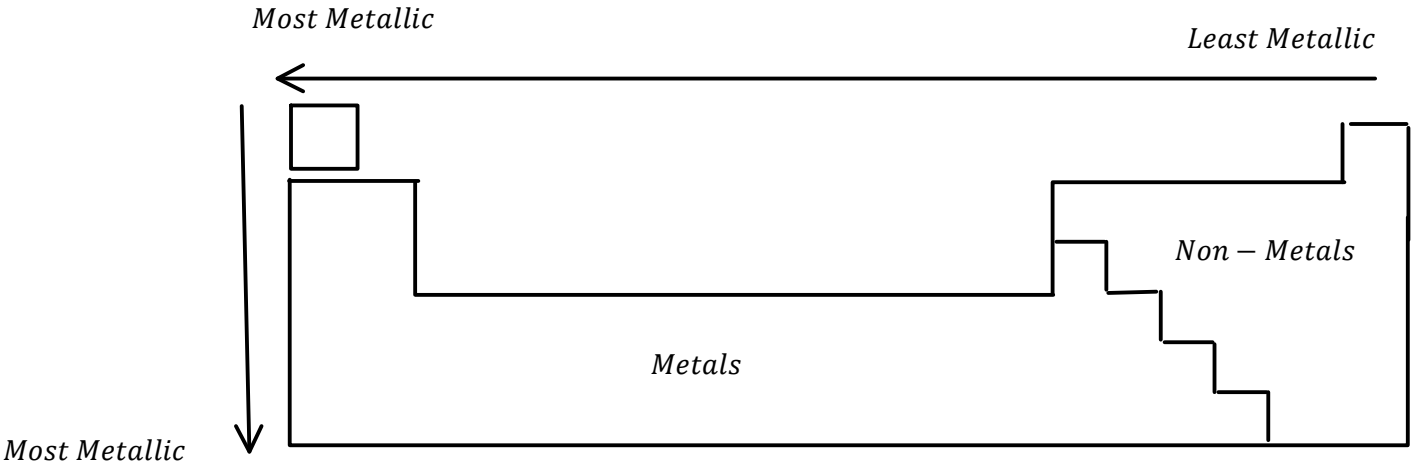
C11 - 4.3 - Properties Notes

Properties of metals:

Shiny with a metallic lustre
Good conductors f heat and electricity
Sometimes flexible if thin
Malleable – compressed easily
Ductile – easily stretch
Solid phase at room temperature except Mercury

Properties of non-metals:

Gases liquids and weak solids at room temperature
Bad conductors of and electricity



C11 - 4.4 - Chemical bonding notes

Electrostatic force: that force between the attraction or repulsion of two charged particles.

Opposite charges attract
Like charges repel
Attraction/Repulsion is proportional to charge
Attraction is inversely proportional to distant,

Open shell: a shell with less than its maximum number of electrons

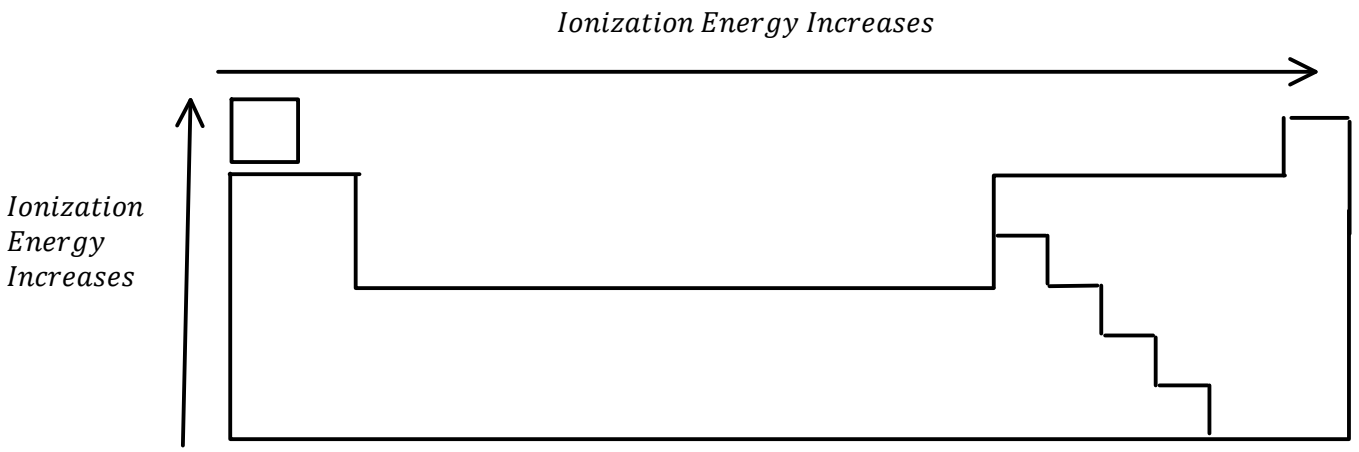
Closed shell: a shell with its maximum number of electrons.

Valence electron: electrons in Outermost Shell

Noble gases have no valence electrons. Hence are not reactive

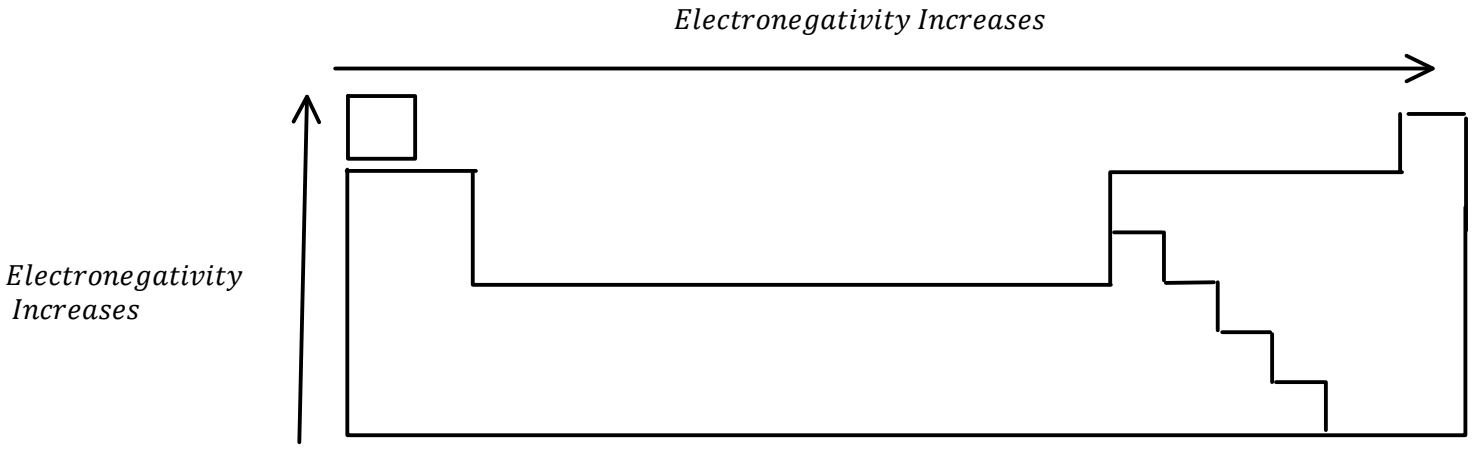
C11 - 4.4 - Ionization energy notes

Ionization energy: the energy required to take away an electron from an uncharged atom.



Ionic bond:

Electronegativity: the tendency of an atom to attract electrons.



Covalent Bonds:

Dipole – Dipole

London Forces: