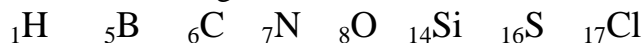


## Series of exercises N°1

### Chemical Bonding

#### Exercise N°1:

1. Write the Lewis structure of the following atoms :



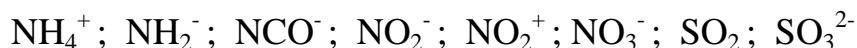
2. We consider the following molecules :



- a. Provide the Lewis structure of these molecules.  
b. Using the Valence Shell Electron Pair Repulsion (VSEPR) theory, determine: the hybridization state of the central atom, the type AX<sub>m</sub>En, and the geometry of each molecule.

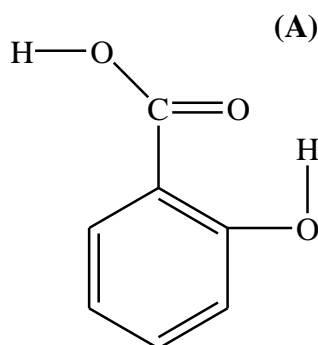
#### Exercise N°2:

Provide the Lewis structure of the molecules below as well as the geometry predicted by the V.S.E.P.R. method.

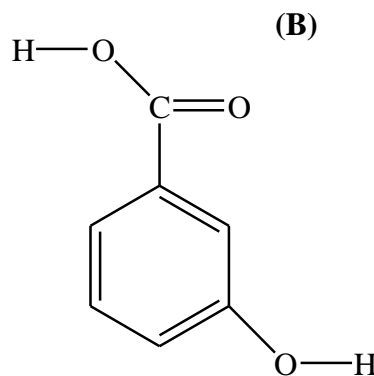


#### Exercise N°3 :

2-Hydroxybenzoic acid or salicylic acid (A) melts at 159 °C, while 3-Hydroxybenzoic acid (B) melts at 203 °C.



T<sub>m</sub> = 159 °C



T<sub>m</sub> = 203 °C

Interpret the observed difference in melting temperature.

#### Exercise N°4:

Represent schematically the different overlaps of atomic orbitals for the molecules below, specifying the hybridization state of the carbon atom in each case.

