

## First directed work of biochemistry

### Chemical bonds

#### Exercise 1 : Indicate which of these statements is (are) correct

**Question 1 :** Concerning the electronegativity of an atom:

- The electronegativity of an atom characterizes its ability to attract electrons when forming a chemical bond with another atom.
- The difference in electronegativity between two atoms determines the nature of the bond established between them.
- The electronegativity of elements in the periodic table decreases from top to bottom in columns and from right to left in rows.

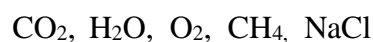
**Question 2 :** Concerning strong bonds

- Covalent bonds are intramolecular bonds.
- The covalent bond is nonpolar when the difference in electronegativity is zero or small.
- The covalent bond is polar when the difference is average.
- An ionic bond is formed by the sharing of a pair of electrons between atoms. In homonuclear molecules the covalent bonds are polar.

**Question 3 :** Concerning weak bonds

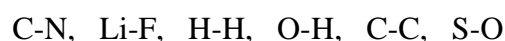
- Van der Waals interactions are the strongest of the intermolecular bonds.
- Hydrophobic interactions are intermolecular bonds.
- Covalent bonds are a little longer than hydrogen bonds.

**Exercise 2:** Determine what type of bond will unite the various molecules below :



The electronegativities of the C, H, O, Na and Cl atoms are respectively 2,55 ; 2,2 ; 3,44 ; 0,93 et 3,16.

**Exercise 3.** Order the following bonds from least polar to most polar :



The electronegativities of the C, H, O, N, Li, F and S atoms are respectively 2,55 ; 2,2 ; 3,44 ; 3,04 ; 0,98 ; 3,98 et 2,58.