University Center of Mila **Academic year :2024/2025**
Institute of Sciences and Technology **Module : structure of matter**
First Year ST

Series N° 1

Exercise 01:

1-Determine the number of mole and mass contained in:

a/ $3{,}612.10^{24}$ atoms of zinc. (Zn = 65)

b/ $36.12.10^{21}$ molecules of NaOH. (H = 1, O = 16, Na=23)

2-Calculate the value of **a.m.u** in grams and the number of Avogadro **N**, knowing that the mass of a carbon atom is $1{,}99 \times 10^{-23}$ g.

Exercise 02:

Classify the following aqueous solutions of sulphuric acid (H_2SO_4) in descending order of concentrations. M (H_2SO_4) = 98g/mol

a/ 1 normal, b/ 1 molar and c/ 53 g of H_2SO_4 in 500 ml of solution.

Exercise 03:

the concentration **C** of sodium nitrate solution ($NaNO_3$) is 3 mol/l, has a volumetric mass **ρ** of 1159 g/l. calculate :

1 - Mass concentration **T**. M($NaNO_3$) = 85g/mol

2- Molar fraction **X** and Mass percentage **W%**.

3- Normality **N** and Molality **M**.

4- The number of gram equivalent contained in 500 ml of solution.