DIRECTED WORK N°1

Don't give up

Ex 1- Calculate the mass percentage of a sulfuric acid solution H_2SO_4 containing 49 g acid in 196 g water.

Ex 2- Calculate the quantity of KOH solution that can be obtained from 0.3 moles of solute in **11.2%** solution by mass percentage.

Data: Molar atomic mass in g /mol: **K** = 39 ; **O** = 16 ; **H** = 1.

Ex 3- An aqueous solution of NaCl with volume $V_{solution}$ = 1L, contains 0.02 moles of solute. Calculate the amount of solute in 50 mL of this solution.

Ex 4- In $CuCl_2$ solution at 0.1 mol/l , what is the effective concentration of Cu^{2+} ions? In Cl^- ions?

Ex 5- What's the mass of **$CuSO_4,5H_2O$** needed to prepare 100 mL of copper sulfate solution with a molar concentration of 0.1 mol/L?

Data: Molar atomic mass in g /mol: **Cu** = 63,5 ; **S** = 32 ; **O** = 16 ; **H** = 1.

Ex 6- What is the aluminum ion and fluoride ion concentration of a 5.10^{-3} mol.L^{-1} aluminum fluoride solution?

1- On a une solution de chlorure de sodium contient 0,9% en masse de **NaCl.**

a- Déterminer la concentration massique de cette solution en prenant pour la masse volumique de la solution: ϱ = 1g/cm³.

b- Déduire sa concentration molaire.

Ex 7- A sodium chloride solution contains 0.9% **NaCl** by mass.

a- Determine the mass concentration of this solution, taking the density of the solution to be ϱ = 1g/cm3.

 b- Deduce its molar concentration.

Data: Molar atomic mass in g /mol: **Na**=23 ; **Cl**=35,5.

Ex 8-1- 500 ml of a **CoSO₄** solution of concentration 75 mmol/l is prepared from

anhydrous crystals considered to be pure (**M**$_{Co}$= 58.99g/mol).

a- Write the solution balance equation.

b-What is the effective molar concentration of the ions in this solution?

c-What is the mass of solid to be dissolved to prepare this solution?

2- The solution (S₂) used is copper (II) nitrate three hydrate!

a- Write the chemical formula of this compound.

Try again

b-Calculate its molar mass.

c-What is the molar concentration of the solution? n(Cu(NO3)2) = 0.2mol

Data : CoSO₄ ; Cu(NO₃)₂,3H₂O; V(S₂) =200ml M$_N$ = 14 g mol^{-1}

Ex 9- Calculate the normality of phosphoric acid, which contains:

a- 98 g solute per 500 mL solution.

b- 0.2 gram equivalents of solute per 50 mL of solution.

c- 6 moles of solute per 3000 cm³ of solution.

Data: H₃PO₄ ; molar mass atomic in g.mol^{-1} : **P** = 31 ; **O** = 16; **H** = 1.

Ex 10- The following information is on a label on the bottle of commercial hydrochloric

acid solution:

> Hydrogen chloride: **HCl** , Molar mass = 36.5 g./mol
> **HCl** mass : 35.3% ; **d** : 1.18

a-Calculate the mass of hydrogen chloride contained in one liter of commercial

hydrochloric acid solution.

b-Determine the molar concentration of the commercial solution.

c- Determine the mole fraction of **HCl** and **H₂O** by two methods?

Note:

Each Student is Obliged To Bring a Copy Of The Series With Them (Phone is Forbidden in The TD Classroom).

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