Topic 2.

SOLUTION CONCENTRATIONS: PERCENTAGE. MOLARITY.

Theoretical QUESTIONS for preparation:

I. Concentrations
1. Solution, solute, solvent
2. Concentration of solutions
   a. Percent by weight
   b. Percent by volume
   c. Percent by weight/volume
   d. Weight or volume fractions
3. Concentrations depending on the mole unit
   a. Molarity

TASKS

Example 1: A 1.215-g sample of NaCl is dissolved in 65.483 g of water. What is the mass percent of NaCl in the solution?

Given:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Example 2: How many grams of glucose and of water are in 500 g of a 4% by-mass glucose solution?

Given:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Example 3: What is the molarity of a solution made using 45.0 g of NaCl and enough water to give 1 liter of solution?

Given:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Example 4: How many moles of solute are in 682. mL of 1.5 M NH_3 solution?

Given:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Example 5: How many grams of solute are in 2.4 mL of a .02 M H_2O_2 solution?

Given:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Example 6: There is 29.25 g $CaCl_2$ in 500 ml. What is its molarity?

Given:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Example 7: How would you prepare a 100.0 mL of 0.500 M KI starting with 2.00 M KI?

Given:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Example 8: What volume of 3.25 M sulphuric acid is needed to prepare 0.5 L of 0.130 M H_2SO_4?

Given:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Example 9: Calculate the molarity of an aqueous vinegar solution, which is 5.0% $HC_2H_3O_2$ (MM of $HC_2H_3O_2$ = 60 g/mol), density ρ=1g/ml.

Given:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____