Name:
Date: CALVIN
Hour:

Chemistry – Ch.15/16 Quiz

☆☆☆☆

1) **Find the Molarity for a solution where 8.14 mol of Magnesium Hydroxide are dissolved in 7.00 L of water.**

M = ?
n =
L =

$$(M) = \frac{n}{L} = \frac{(8.14\ mol)}{(7.00\ L)} = \boxed{1.16\ M}$$

2) **Find the volume of 1.50 M NaCl needed for a reaction that requires 2.50 moles of NaCl.**

L = ?
M =
n =

$$(L) = \frac{n}{M} = \frac{(2.50\ mol)}{(1.50\ mol/L)} = \boxed{1.67\ L}$$

3) **Find the molality of a solution made from dissolving 0.425 moles of sucrose ($C_{12}H_{22}O_{11}$) in 0.225 kg of water.**

molal. = ?
n =
kg =

$$(molal.) = \frac{n}{kg} = \frac{(0.425\ mol)}{(.225\ kg)} = \boxed{1.89\ molal.}$$

4) **The boiling point of an aqueous solution containing a nonvolatile electrolyte is 100.94 degrees Celsius.**
   a. **What is the boiling point elevation?**
   b. **What is the molality of the solution?**

$\Delta t_b = 0.94°C$
$k_b = 0.51°C/molal.$
molal. = ?

$$(molal.) = \frac{\Delta t_b}{k_b} = \frac{(0.94°C)}{(0.512°C/molal)} = 1.84\ molal.$$

2nd

5) **Find the freezing point depression when 0.479 moles of $C_6H_{12}O_6$ are added to 0.361 kg of water.**

1st

Δt_f = ?
$k_f = -1.86°C/molal$
molal = 1.33 molal

$$(\Delta t_f) = k_f \cdot molal. = (-1.86°C/molal)(1.33\ molal) = \boxed{-2.47°C}$$

molal. = ?
n =
kg =

$$(molal.) = \frac{n}{kg} = \frac{(0.479\ mol)}{(0.361\ kg)} = 1.33\ molal.$$

6) **If 85.0mL of 4.00M HCl is diluted to a new volume of 275 mL, find the new Molarity of the solution. (HINT: $C_1V_1 = C_2V_2$)**

C_1 =
V_1 =
C_2 = ?
V_2 =

$$(C_2) = \frac{C_1V_1}{V_2} = \frac{(85.0\ mL)(4.00\ M)}{(275\ mL)} = \boxed{1.24\ M}$$

Ex// $MgF_{2(s)} \xrightarrow{H_2O} Mg^{+2}_{(aq)} + 2F^{-1}_{(aq)}$

7) Write out dissolution reactions for:
   a. Sodium Chloride $NaCl_{(s)} \xrightarrow{H_2O} Na^{+1}_{(aq)} + Cl^{-1}_{(aq)}$
   b. Potassium Sulfide $K_2S_{(s)} \xrightarrow{H_2O} 2K^{+1}_{(aq)} + S^{-2}_{(aq)}$
   c. Calcium Nitrate $Ca(NO_3)_{2(s)} \xrightarrow{H_2O} Ca^{+2}_{(aq)} + 2NO_3^{-1}_{(aq)}$

8) In one BRIEF statement explain how each factor increases the rate of dissolution:
   a. Agitation ~ Bring fresh solvent in contact with solute
   b. Temperature ~ More collisions between solute + solvents
   c. Surface area ~ More contact between solute + solvent

9) Name the following *hydrates*:
   a. $K_2(SO_4)*3H_2O$ Potassium Sulfate · trihydrate
   b. $AlCl_3*5H_2O$ Aluminum Chloride · penta hydrate
   c. $Fe_2O_3*4H_2O$ Iron (III) Oxide · tetra hydrate

10) Complete the chart (Y or N for each):

	Suspension	Colloid	Solution
a. Settles	Y	N	N
b. Tyndall effect	Y	Y	N
c. Filters	Y	N	N

11) Term for two liquids that will not mix together (like oil and water) immiscible

12) *Use the chart on the formulas page*:
   a. Which one is NOT affected by temperature NaCl
   b. Which one is MOST affected by temperature KNO_3
   c. Which one becomes LESS soluble with temperature $Yb_2(SO_4)_3$
   d. How many grams of KNO3 can be dissolved in 100g of water at 70 degrees Celsius? 120 g

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13) A solution that cannot hold any more solute is saturated.

14) Two ways to dissolve more solute in a saturated solution are:
   i. Add more solvent
   ii. Increase temp.

15) Give ONE example where the solvent is NOT water:

Perm...

Bonus ~ TBA: Draw a giraffe

GO VIKINGS!!!