Philadelphia University **Second semester**
Faculty Of Science **2015/2016**
Basic Science Department **Midterm Exam**
Practical General Chemistry **60 min**
0212102 A **Date 21/4/2016**

Student Name : ---------- **Instructor : Lana Qadumii**
Registration no. :---------- **Khadeejha Al Abrouni**

Question1: Fill in the Blanks with the suitable answer:

Consider the following flasks:

(Note : the maximum solubility of $NaNO_3$ at 20ºC is 100g/ L solution).

(Molar mass $NaNO_3$=85.0 g/mol)

 20ºC #1	 #2	 # 3	 # 4
0.100 *M* NaNO $_{3\ (\text{solution})}$	1.00 *M* NaNO $_{3(\text{solution})}$	1.17 *M* NaNO $_{3(\text{solution})}$	3.00 *M* NaNO $_{3(\text{solution})}$

a- Which of the above flasks contain a diluted solution? _____

b- Which of the above flasks contain a saturated solution? _____

c- What is "*M*" an abbreviation for? _____ What are the units of "*M*"? _____

d- What is the name of the glassware in the above illustration? _____

e- The solute is _____, the solvent is _____ in the above flasks.

Question 2:

Given the following data for the hydrate $MgSO_4$. X H_2O

- Mass of empty crucible ----------40.60 g
- Mass of empty crucible + Hydrates ----------42.02 g
- Mass of empty crucible + anhydrous ----------41.35 g
- (Mwt anhydrous : 120.5 g/mol , (Mwt H_2O: 18 g/mol)

1- Calculate the mass percent of H_2O :
a. 47.2 % b. 52.8 % c. 46.9 % d. 72.6%

2- Calculate the value of " X"
a) 2 b) 4 c) 6 d) 7

Question 3:

A student has obtained the following set of data about density measurements of a solid:

- Mass of an empty beaker = 66.7 g.
- Mass of a beaker + metal pieces = 70.9 g.
- Initial water level in the graduated cylinder = 55.0 mL.
- Final water level in the graduated cylinder with the metal pieces = 57.3 ml.

The density (g/ cm^3) of the solid is:

a. 1.83 b. 2.20 c. 3.23 d. 4.20

Question 4:

In an experiment, a student dissolved a 5.0 g $BaCl_2$. (molar mass = 244 g/mol), with Na_3PO_4 (molar mass = 380 g/mol) . Calculate the number of moles of Na_3PO_4 used to complete the reaction:

The BALANCED equation is:

$3BaCl_2 + 2\ Na_3PO_4 \longrightarrow Ba_3(PO_4)_2 + 6\ NaCl$

a. 0.0035 b. 0.014 c. 0.013 d. 0.13

Question 5:

If 100 ml of 2.5 M KBr solution was diluted to 150 ml, what is the Molarity of the solution?

a. 0.17M b. 1.0 M c. 1.7 M d. 2.5 M

Question 6:

The mass percent of calcium oxide if 7.0 g is dissolved in 500 g of water is:

a. 1.4 % b. 14.0% c. 30% d. 40%

Question 7:

Which of the following statements is **not correct** concerning lab safety rules?

a. Lab instructor must be notified if there is a mercury spill due to a broken mercury thermometer.
b. The wearing of shorts, tank and sandals is permitted in the laboratory.
c. Fire alarms, fire extinguishers, showers, and eye washing device, are examples of safety equipment's in your lab.
d. Clean pipets and droppers cannot be inserted into the original reagent bottle.

Question 8:

0.175 g of Aluminum powder is burned in an oxygen atmosphere, 0.331 g of a oxide is obtained. The empirical formula of the aluminum oxide is:

(M.W of Al = 26.98, M.W of O= 16)

a) AlO_3 b) Al_2O_5 c) AlO_2 d) Al_2O_3

Question 9:

Complete and balance the following chemical equations:

1) $NaHCO_{3(s)} + HCl_{(aq)} \longrightarrow$

2) $SrO_{(s)} + H_2O_{(L)} \longrightarrow$

3) $Ca_{(s)} + HCl_{(aq)} \longrightarrow$

4) $N_2O_{5(s)} + H_2O_{(L)} \longrightarrow$

5) $MgO_{(s)} + H_2O_{(L)} \longrightarrow$

Question10:

Classify each the following substance as strong, weak or nonelectrolyte:

$MgCl_2$, Distilled H_2O, HBr, CH_3COOH, Sugar, $CuSO_4$, NaOH

Strong electrolyte	Weak electrolyte	Non electrolyte