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

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Question1: Fill in the Blanks with the suitable answer:

Consider the following flasks:

(Note : the maximum solubility of KBr at 25ºC is 678g/ L solution).

(Molar Mass KBr = 119.0 g/mol)

 25ºC #1	 # 2	 # 3
1.170 *M* $KBr_{(\text{solution})}$	5.69 *M* $KBr_{(\text{solution})}$	7.00 *M* $KBr_{(\text{solution})}$

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

b- Which of the above flasks contain a dilute 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 anhydrous :
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 = 84.35 g.
- Mass of a beaker + metal pieces = 98.25 g.
- Initial water level in the graduated cylinder = 55.00 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. 6.00 b. 5.90 c. 6.10 d. 6.04

Question 4:

In an experiment, a student dissolved a 1.30 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. 0.0066 c. 0.007 d. 0.0025

Question 5:

If 10.0 ml of 2.5 M KBr solution was diluted to 100 ml, what is the Molarity of the solution?

a. 0.17M b. 0.25M c. 25M d. 2.5M

Question 6:

The mass percent of calcium oxide if 70.0 g is dissolved in 500 g of water is:

a. 10.7% b. 14.0% c. 12.3% d. 40%

Question 7:

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

a. Dispose of all waste in an appropriate manner: Many chemicals need to be disposed off in special containers found in the fume hoods; solids should not be thrown into the sink.
b. Fire alarms, fire extinguishers, showers, and eye washing device, are examples of safety equipment's in your lab.
c. To avoid chemical loss, unused chemicals should be returned to the stock bottles.
d. Long hair should be tied back during lab periods.

Question 8:

0.424 g of iron powder is burned in an oxygen atmosphere, 0.606 g of a reddish brown oxide is obtained. The empirical formula of the iron oxide is:

(M.W of Fe = 55.847, M.W of O= 16)

a) Fe_2O_3 b) Fe_2O_5 c) FeO_2 d) FeO

Question 9:

Complete and balance the following chemical equations:

1) $Na_2CO_{3(s)} + HCl_{(aq)} \longrightarrow$

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

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

4) $SO_{3\ (g)} + H_2O_{(L)} \longrightarrow$

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

Question 10:

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

NaCl, Tap H_2O, HCl, CH_3COOH, Sugar, $CuSO_4$, NaOH

Strong electrolyte	Weak electrolyte	Non electrolyte