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The University of Jordan

Faculty of Science

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Student Name (in Arabic)

1. A flask with a volume of 3.16 L contains 9.33 grams of an unknown gas at 32.0°C and 1.00 atm. What is the molar mass of the gas?

$M_M = \frac{dRT}{P} = \frac{(2.95)(0.08206)(305)}{1} = \cancel{73.0}\ 73.9$ g/mole

$*d = \frac{M}{V} = \frac{9.33}{3.16} = 2.95$

2. A common laboratory reaction is the neutralization of an acid with a base. When 50.0 mL of 0.500 M HCl at 25.0°C is added to 50.0 mL of 0.500 M NaOH at 25.0°C in a coffee cup calorimeter, the temperature of the mixture rises to 28.2°C. What is the heat of reaction per mole of acid? Assume the mixture has a specific heat capacity of 4.18 J/(g·K) and that the densities of the reactant solutions are both 1.00 g/mL.

$q_{rxn} = -q_{sol} = sp\ M\ \Delta T$

$q_{rxn} = \Delta H(n)$ $= (4.18)(100)(3.2) = -1337.6$ J

$*n = 0.025$

$\Delta H = \frac{-1337.6}{0.025} = \frac{-53504\ J}{1000} = \cancel{-54\ kJ}\ -54\ kJ$

The University of Jordan

Dept. of Chem.

Chem. ١٠٩

Fall ٢٠١١

Quiz # ١

10/10

Name;.....عمر احمد سواس..... Section;..2 - 5...

No.;...1315.....

Q١. Use the following data to calculate the density of an unknown liquid?

Mass of the empty beaker	١٠,١٠ g = 10.10
Mass of the (empty beaker + unknown)	٢٠,٣٢ g = 20.32
Volume of the unknown	١٥,٥٠٠ mL = 15.500
Density	

$d = \frac{M}{V}$

$M = 20.32 - 10.10$

$= 10.22$ ml

$d = \frac{10.22}{15.500} = \cancel{0.65}$

0.6594 g/ml

Q٢. Which of the following glassware is used to measure volume exactly?

A) Test tube.
B) Erlenmeyer flask
C) Beaker
D) Pipette.

Q٣. Which one of the following statements is true?

A. Alum must contain aluminum.
B. The general formula of an alum is $M^{I}M^{III}M(SO_4)_2 . xH_2O$
C. The general formula of an alum is $M^{I}M^{II}M(SO_4)_2 . xH_2O$
D. $CuSO_4 . 5H_2O$ is anhydrous salt.

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Quiz #2.

10/10

Name: عمر احمد سواس NO., 0114570

Q1 Calculate the mass of water in 1.0 Kg of $CuSO_4 \cdot 5H_2O$. ((Cu; 63.6); (O; 16.0); (S; 32.0); (H; 1.0))

1.0 kg = 1000 g

$CuSO_4 \cdot 5H_2O \rightarrow CuSO_4 + 5H_2O$

1 kg m = ??

$M_m = 159.6 + 90.08$
$= 249.68$

$M_m = 18.016$

$n = \frac{1000}{249.68}$

$n = 4.005$ g/mol

$m = (M_m)(n)$
$= (18.016)(4.005)$
$= 72.064$ g

$= 360.77$ g

~~mass of H_2O = $\frac{no. \times \text{molar mass}}{\text{molar mass of compound}}$~~

~~$= \frac{(5)(18.016)}{249.68}$~~

~~1 → 5~~
~~4.025 → x~~
~~x = 20.025 → 0.36078~~

~~no × molar mass~~

Q2. The purpose of today's experiment is determine the empirical formula for compounds.

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Name. عمر احمد سواس

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15/15

Q1 A sample of 50.0 mL of a commercial vinegar is titrated against a 1.00 M NaOH solution what is the concentration (in M) of acetic acid present in the vinegar if 5.75 mL of the Base were required for the titration?

M_2

5.75

$V = 50.0$ ml

$M = ??$

$M_{NaOH} = 1$

$V = 5.75$

$V_1 M_1 = V_2 M_2$

$(50)(M_1) = (5.75)(1)$

$M = 0.115$ M

Q2 The name of today's experiment is neutralazition capacity of antacid.

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Quiz 3 Date: ٢٠١١/١١/٢٨

Name (In Arabic) : عمر الدبوس Table No.: 13B

1. Given the following set of data:
   - Volume of ClO^- = 25.0 mL
   - Volume of 0.20 M S_2O_3 = 18.5 mL

   Calculate concentration of ClO^-

$n_{S_2O_3} = (M)(V) = 3.7 \times 10^{-3}$ mole

$n_{ClO^-} = \frac{n_{S_2O_3}}{2} = 1.9 \times 10^{-3}$ mole

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$M = \frac{n}{V} = \frac{1.9 \times 10^{-3}}{25 \times 10^{-3}} = 0.076$ mole/L

0.074

2. Given the following set of data:
   - Volume of diluted bleach solution = 15.0
   - Volume of 0.10 M $S_2O_3^=$ solution needed mL to titrate diluted beleach solution = 22.0 mL
   - Dilution factor = 25

   Calculate mass % of original bleach solution (density = 1.10 g/mL and molar mass of NaClO = 74.5)

$n_{S_2O_3} = (0.10)(22 \times 10^{-3}) = 2.2 \times 10^{-3}$ mole

$n_{ClO} = \frac{n_{S_2O_3}}{2}$

$\Rightarrow n_{ClO} = 1.1 \times 10^{-3}$ mole, $M_{clo} = \frac{n}{V} = \frac{1.1 \times 10^{-3}}{15 \times 10^{-3}} = 0.073$

$M_1 = (M)(\text{dilution factor}) = 1.83$

$\text{Mass \%} = \frac{(1.83)(74.5)}{(10)(1.10)} = 12.4\%$