In-class exercise #6.1: chem 1114

**Chemical Composition**

**8.1.1. Chemical Compositions from Weight**

**Problem 1:Simple conversion-2 elements**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Weight % | Atomic mass | moles | ratio |
| C | 27.27 | 12 g/mol |  |  |
| O | 72.73 | 16 |  |  |

Empiric formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Problem 2: Simple conversion-3 elements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Weight % | Atomic mass | moles | Ratio |
| C | 33.3 | 12 |  |  |
| H |  8.3 | 1 |  |  |
| O | 44.4 | 16 |  |  |

Empiric formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Problem 3: 4 elements with multiplier step & Molecular formula step

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element | Weight % | Atomic mass | moles | ratio |  X multiplier |
| C | 33.64 | 12 |  |  |  |
| H |  1.87 | 1 |  |  |  |
| O | 44.86 | 16 |  |  |  |
| N | 19.63 | 14 |  |  |  |

 Empiric formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

MW= 856 Molecular formula = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8.1.2. Chemical Compositions from Reaction Data

1. A 0.30 gram sample of carbon black is burned in a covered crucible. The collected gas weighs 0.70 grams. What is the empiric formula of the gas ? (C =12, O =16)
2. A hydrocarbon sample (Cx Hy) is burned in oxygen producing 1.0 gram of CO2  and 0.4086 g H2O. What is the empiric formula for the hydrocarbon ? (C=12, O=16, H=1)

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 Equation Balancing (board work)

1. balanced or not ?

C3H8 + 7O2 -----🡪 3CO2 + 4H2O

*BALANCE THESE*

1) \_\_\_\_\_\_ AgNO3 + \_\_\_\_\_\_K2CrO4 ----🡪 \_\_\_\_\_\_\_Ag2CrO4 + \_\_\_\_\_\_\_KNO3

## Ag

## N

### Cr

## O

 reactant side product side

2) \_\_\_\_\_\_\_Ca(OH)2 + \_\_\_\_\_\_\_HCl ------🡪\_\_\_\_\_\_\_ CaCl2 + \_\_\_\_\_\_H2O

## Ca

## O

## H

## Cl

##  reactant side product side

1. \_\_\_\_\_\_\_\_H2 + \_\_\_\_\_\_\_\_\_O2 -----------🡪 \_\_\_\_\_\_\_H2O

## H

#### O

1. \_\_\_\_\_\_\_C3H8 + \_\_\_\_\_\_\_O2 --------🡪 \_\_\_\_\_\_\_\_CO2 + \_\_\_\_\_\_\_\_H2O

#### C

#### H

O