**Exercise 5**

**Chem 1013 Intro to Chem**

**Spring 2014 Alfred State College**

**Chemical Composition and Combustion problems**

**5.1 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 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5.2 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)