**Chem 1013: mini-quiz #20: % composition**

Your name: ANSWERS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_/6

**% Composition Problems**

1. **A compound contains 30.434 % N and 69.565 % O by weight. What is it’s empiric formula ?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **element** | **Weight, g** | **AW g/mol** | **Mol=n=w/AW** | **n/nmin** |
| **N** | **30.434** | **14** | **30.434/14=2.1738** | **2.1738/2.1738=1** |
| **O** | **69.565** | **16** | **69.565/16=4.3478** | **4.3478/2.1738=2** |

**Empiric formula = \_\_\_\_\_\_\_\_\_NO2\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**2. Given compound X containing 3.0 grams C, 4.0 grams O , 1.5 g H and 7.0 grams N , use the table provided below to determine the empiric formula for compound X**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Weight (g) | Atomic weight | Mol=n=w/AW | n/nmin |
| C | 3 | 12 g/mol | 3/12=0.25 | 0.25/0.25=1 |
| H | 1.5 |  1 | 1.5/1=1.5 | 1.5/0.25=6 |
| O | 4 |  16 | 4/16=0.25 | 0.25/0.25=1 |
| N | 7 | 14 | 7/14=0.5 | 0.5/0.25=2 |

X empiric formula = **C H O N MOLECULAR MASS=12+6+16+2\*14=62**

2

1

6

1

**3 Compound X above actually has a molecular weight of 248 g/mole. What is the molecular formula of X ?**

**248/62=4**

X molecular formula= **C H O N**

24

8

4

4