Name _____Mr. Perfect_____ Date ____Sp 09_____

1. An element has three naturally occurring isotopes with the following masses and mass spectrum peak heights listed below: Divide each peak height by the total peak height.

Isotopic Mass (Amu)	Peak Height (cm)	Fractional Abundance
27.977	18.44	0.9221
28.976	0.94	0.0470
29.974	0.62	0.0309

Calculate the atomic weight of this element. (2 pts)

(27.977)(0.9221) + (28.976)(0.0470) + (29.974)(0.0309) = 28.08 Amu

2. Name the following compounds: (2 pts)

a) BCl_3

Boron trichloride

b) $NaClO_3$

Sodium chlorate

3. Balance the following equation: (2 pts)

$$\underline{2}\ KClO_3 \rightarrow \underline{2}\ KCl + \underline{3}\ O_2$$

4. Ascorbic acid (vitamin C) cures scurvy. It is composed of 40.92% C, 4.58% H, and the remaining percentage as oxygen. Determine the empirical formula for this compound. (4 pts)

% O = 100% - 40.92% – 4.58% = 54.5%

Assume a 100 g sample:

$40.92\ g\ C \times \frac{1\ mol}{12\ g} = 3.407\ mol \div 3.406\ mol = 1$

$4.58\ g\ H \times \frac{1\ mol}{1\ g} = 4.54\ mol \div 3.406\ mol = 1.33$

$54.8\ g\ O \times \frac{1\ mol}{16\ g} = 3.406\ mol \div 3.406\ mol = 1$

multiply by 3 to yield the following:

Empirical Formula

$C_3H_4O_3$