WS 7.2 Percent Composition Practice Name: KEY p.

1) Find the percent composition by mass of each element in the following compounds:

a) MgF_2

$24.31 + 2(19.00) = 62.31$ amu

$\%Mg = \frac{24.31}{62.31} \times 100$

%Mg: 39.01% %F: 60.99%

b) $C_6H_{12}O_6$ $6(12.01) + 12(1.01) + 6(16.00) =$ 180.18 amu

$\%C = \frac{6(12.01)}{180.18} \times 100$ $\%H = \frac{12(1.01)}{180.18}$

%C: 39.99% %H: 6.73% %O: 53.28%

c) $(NH_4)_2S$

$2(14.01) + 8(1.01) + 32.07 = 68.17$ amu

$\%N = \frac{2(14.01)}{68.17} \times 100$

%N: 41.10% %H: 11.85% %S: 47.04%

d) $Mg_3(PO_4)_2$ $3(24.31) + 2(30.97) + 8(16.00) =$ 262.87 amu

$\%Mg = \frac{3(24.31)}{262.87} \times 100$

%Mg: 27.74% %P: 23.56% %O: 48.69%

2) Find the mass percent of iron (Fe) in the following compounds:

a) iron (II) oxide (formula: FeO)

$\%Fe = \frac{55.85}{71.85} \times 100 =$ 77.73% Fe

b) iron (III) oxide (formula: Fe_2O_3) (+3, −2)

$\%Fe = \frac{2(55.85)}{2(55.85 + 3(16.00)} \times 100 =$ 69.94% Fe

3) Find the mass percent of oxygen (O) in hydrogen peroxide (H_2O_2):

$\%O = \frac{2(16.00)}{2(1.01) + 2(16.00)} \times 100 =$ 94.06% O

5) A sample of lead (?) oxide is found to contain 13.4% oxygen by mass. Is this lead (II) or lead (IV) oxide?

lead (II) = PbO

$\%O = \frac{16.00}{223.2} \times 100 =$ 7.168% O

lead (IV) = PbO_2

$\%O = \frac{32.00}{239.2} \times 100 =$ 13.38% O

6) How many grams of oxygen (O) are in 250. grams of MgO (magnesium oxide)?

$\%O = \frac{O}{MgO} = \frac{16.00}{40.31} \times 100 =$ 39.69% O

$250.g \times 0.3969 =$ 99.2 g O

7) How many grams of sulfur (S) are in 3.45 grams of SO_2?

$\%S = \frac{32.07}{64.07} \times 100 =$ 50.05% S

$3.45g \times 0.5005 =$ 1.73 g S