

Pg 315 # 58, 59f, 60b, 61abc, 63abc,
64bc, 65abcd, 66, 67, 68, 69

$$58) a) 15.5 \text{ g SiO}_2 \times \frac{1 \text{ mol SiO}_2}{60.07 \text{ g SiO}_2} = 0.252 \text{ mol SiO}_2$$

$$b) 0.0688 \text{ g AgCl} \times \frac{1 \text{ mol AgCl}}{143.32 \text{ g AgCl}} = 4.800 \times 10^{-4}$$

$$c) 79.3 \text{ g Cl}_2 \times \frac{1 \text{ mol Cl}_2}{70.9 \text{ g Cl}_2} = 1.12 \text{ mol Cl}_2$$

$$d) 5.96 \text{ g KOH} \times \frac{1 \text{ mol KOH}}{56.11 \text{ g KOH}} = 0.106 \text{ mol KOH}$$

$$e) 937 \text{ g Ca(C}_2\text{H}_3\text{O}_2)_2 \times \frac{1 \text{ mol Ca(C}_2\text{H}_3\text{O}_2)_2}{158.14 \text{ g Ca(C}_2\text{H}_3\text{O}_2)_2} = 5.93 \text{ mol Ca(C}_2\text{H}_3\text{O}_2)_2$$

$$f) 0.800 \text{ g Ca} \times \frac{1 \text{ mol Ca}}{40.08 \text{ g Ca}} = 0.0200 \text{ mol Ca}$$

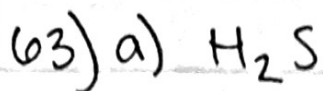
$$59) f) 3.21 \times 10^{-2} \text{ mol Ni} \times \frac{58.69 \text{ g Ni}}{1 \text{ mol Ni}} = 1.88 \text{ g Ni}$$

$$60) b) 0.44 \text{ mol} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = 9.9 \text{ L C}_2\text{H}_6$$

$$61) a) \text{C}_3\text{H}_8 \quad \frac{44.11 \text{ g C}_3\text{H}_8}{1 \text{ mol C}_3\text{H}_8} \times \frac{1 \text{ mol C}_3\text{H}_8}{22.4 \text{ L C}_3\text{H}_8} = 1.97 \text{ g/L}$$

$$b) \text{Ne} \quad \frac{20.18 \text{ g Ne}}{1 \text{ mol Ne}} \times \frac{1 \text{ mol Ne}}{22.4 \text{ L}} = .900 \text{ g/L}$$

$$c) \text{NO}_2 \quad \frac{45.99 \text{ g NO}_2}{1 \text{ mol NO}_2} \times \frac{1 \text{ mol NO}_2}{22.4 \text{ L NO}_2} = 2.05 \text{ g/L}$$

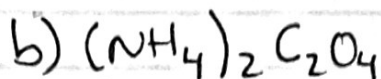


$$\frac{1.01 \times 2}{2(1.01) + 32.07} \times 100 = 5.9\% \text{ H}$$

$$H = 1.01$$

$$S = 32.07$$

$$\frac{32.07}{2(1.01) + 32.07} \times 100 = 94.1\% \text{ S}$$



$$N = 14.01 \times 2$$

$$H = 1.01 \times 8$$

$$C = 12.01 \times 2$$

$$O = 15.99 \times 4$$

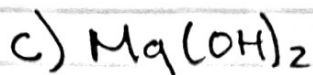
$$\frac{28.02}{124.08} \times 100 = 22.6\% \text{ N}$$

$$\frac{8.08}{124.08} \times 100 = 6.5\% \text{ H}$$

$$124.08$$

$$\frac{24.02}{124.08} \times 100 = 19.4\% \text{ C}$$

$$\frac{63.96}{124.08} \times 100 = 51.5\% \text{ O}$$



$$Mg = 24.31$$

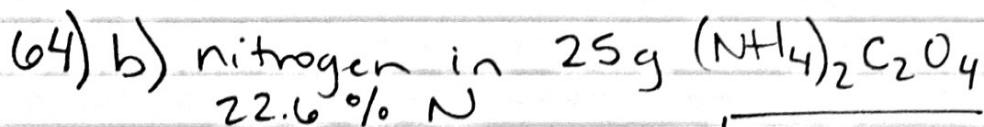
$$O = 15.99 \times 2$$

$$H = 1.01 \times 2$$

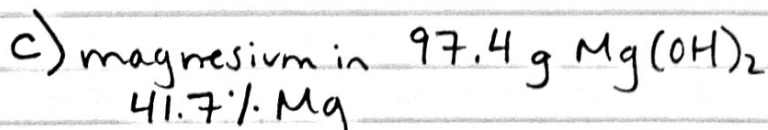
$$\frac{24.31}{58.31} \times 100 = 41.7\% \text{ Mg}$$

$$\frac{31.98}{58.31} \times 100 = 54.8\% \text{ O}$$

$$\frac{2.02}{58.31} \times 100 = 3.5\% \text{ H}$$



$$25g \times .226 = \boxed{5.65g \text{ N}}$$



$$97.4 \times .417 = 40.6g \text{ Mg}$$

- 65) a) $\text{FeCl}_2 \quad \frac{55.85}{126.75} \times 100 = 44\%$
 b) $\text{Fe(OH)}_2 \quad \frac{55.85}{89.87} \times 100 = 62\%$
 c) $\text{Fe(C}_2\text{H}_3\text{O}_2)_3 \quad \frac{55.85}{177.09} \times 100 = 31.5\%$
 * d) $\text{FeO} \quad \frac{55.85}{71.84} \times 100 = 77.7\%$

66) $6.93 \text{ g O} \quad 7.36 - 6.93 = .43 \text{ g H}$
 ← masses! →
 mass to mole, divide by small

$$6.93 \text{ g O} \times \frac{1 \text{ mol O}}{15.99 \text{ g O}} = \frac{.433}{.425}$$

$$.43 \text{ g H} \times \frac{1 \text{ mol H}}{1.01 \text{ g H}} = \frac{.425}{.425}$$

$\cong 1 \qquad \cong 1$

empirical formula = OH or HO
 $\frac{\text{molecular mass}}{\text{empirical mass}} = \frac{34 \text{ g}}{17 \text{ g}} = 2$

$\text{HO} \times 2 = \text{H}_2\text{O}_2$ (hydrogen peroxide!)

- 67) a) S_2Cl_2 b) $\text{C}_6\text{H}_{10}\text{O}_4$ c) Na_2SO_3
 empirical ↑

68) a) $\text{CH}_2\text{O} \quad \frac{90 \text{ g}}{30.02 \text{ g}} = 3 \quad \text{C}_3\text{H}_6\text{O}_3$

b) $\text{HgCl} \quad \frac{472.2}{236.04} = 2 \quad \text{Hg}_2\text{Cl}_2$

69) a) $\frac{94.1\% \text{ O}}{15.99}$ $\frac{5.9\% \text{ H}}{1.01}$ mm = 34g

$= \frac{5.88}{5.84}$ $= \frac{5.84}{5.84}$

= 1 = 1

OH or HO ← empirical formula

$\frac{34g}{17} = 2$

molecular formula = H₂O₂

b) $\frac{50.7\% \text{ C}}{12.01}$ $\frac{4.2\% \text{ H}}{1.01}$ $\frac{45.1\% \text{ O}}{15.99}$ mm = 142g

$= \frac{4.22}{2.82}$ $= \frac{4.16}{2.82}$ $= \frac{2.82}{2.82}$

= 1.49 = 1.48 = 1

multiply till whole!

x 2

C₃H₃O₂ ← empirical formula

$\frac{142g}{35.01} = 4$

C₁₂H₁₂O₈ ← molecular formula