Key: moles Quiz Review

(1) $\frac{1.23\ \text{mol} \mid 6.02\times10^{23}\ \text{f.u.}}{\mid 1\ \text{mol}} = \boxed{7.40\times10^{23}\ \text{f.u. } Na_3PO_4}$

(2) $\frac{4.56\ \text{L} \mid 1\ \text{mol}}{\mid 22.4\ \text{L}} = \boxed{.204\ \text{mol } SO_3}$

(3) $\frac{7.89\ \text{mol} \mid 159.70\ \text{g}}{\mid 1\ \text{mol}} = \boxed{1260\ \text{g } Fe_2O_3}$

$2\ \underline{Fe} \times 55.85\ \text{g} = 111.70\ \text{g}$
$3\ \underline{O} \times 16.00\ \text{g} = +\ 48.00\ \text{g}$
$159.70\ \text{g}$

(4) $\frac{10.11\ \text{L} \mid 1\ \text{mol} \mid 6.02\times10^{23}\ \text{atoms}}{\mid 22.4\ \text{L} \mid 1\ \text{mol}} = \boxed{2.712\times10^{23}\ \text{atoms Ne}}$

(5) $\frac{1.213\times10^{22}\ \text{f.u.} \mid 1\ \text{mol} \mid 62.03\ \text{g}}{\mid 6.02\times10^{23}\ \text{f.u.} \mid 1\ \text{mol}} = \boxed{1.245\ \text{g } H_2CO_3}$

$2\ \underline{H} \times 1.01\ \text{g} = 2.02\ \text{g}$
$1\ \underline{C} \times 12.01\ \text{g} = 12.01\ \text{g}$
$3\ \underline{O} \times 16.00\ \text{g} = +\ 48.00\ \text{g}$
$62.03\ \text{g}$

(6) $C_8H_8O_3$

$8\ \underline{C} \times 12.01\ \text{g} = 96.089$
$8\ \underline{H} \times 1.01\ \text{g} = 8.08\ \text{g}$
$3\ \underline{O} \times 16.00\ \text{g} = +\ 48.00\ \text{g}$
$152.16\ \text{g}$

$\%\ C = \frac{96.089}{152.16\ \text{g}} \times 100 = \boxed{63.14\%\ C}$

$\%\ H = \frac{8.08\ \text{g}}{152.16\ \text{g}} \times 100 = \boxed{5.31\%\ H}$

$\%\ O = \frac{48.00\ \text{g}}{152.16\ \text{g}} \times 100 = \boxed{31.55\%\ O}$

(7) 54.48% C | 13.74% H | 31.78% N

$\frac{54.48\ g\ C}{12.01\ g/mol}$ | $\frac{13.74\ g\ H}{1.01\ g/mol}$ | $\frac{31.78\ g\ N}{14.01\ g/mol}$

$= \frac{4.5362\ mol\ C}{2.2684\ mol}$ | $= \frac{13.6040\ mol\ H}{2.2684\ mol}$ | $= \frac{2.2684\ mol\ N}{2.2684\ mol}$

$= 2\ C$ | $= 6\ H$ | $= 1\ N$

EF: C_2H_6N

(8) EF: C_2H_6N

$2\ C \times 12.01\ g/mol = 24.02\ g/mol$

$6\ H \times 1.01\ g/mol = 6.06\ g/mol$

$1\ N \times 14.01\ g/mol = 14.01\ g/mol$

$44.09\ g/mol$

$\frac{88\ g/mol}{44\ g/mol} = 2$

MF

$C_4H_{12}N_2$