Supplementary Mole Calculations Exercise

① $240\,g \times \frac{1\,mole}{112.839\,g\,FeF_3} \times \frac{6.02\times10^{23}\,mlc}{1\,mole}$

$= 1.3\times10^{24}\,FeF_3$ molecules

② $7.40\times10^{23}\,mlc \times \frac{1\,mole}{6.02\times10^{23}\,mlc} \times \frac{169.872\,g\,AgNO_3}{1\,mole}$

$= 209\,g$

③ $9.4\times10^{25}\,mlc \times \frac{1\,mole}{6.02\times10^{23}\,mlc} \times \frac{2.016\,g\,H_2}{1\,mole}$

$= 314.79$

$= 320\,g$ OR $3.2\times10^{2}\,g$

④ $3.025\times10^{24}\,mlc \times \frac{1\,mole}{6.02\times10^{23}\,mlc} \times \frac{6\ I\ atoms}{1\ N_2I_6\ mlc}$

$= 30.1$ moles of I atoms

⑤ $1.00\times10^{24}\,mlc\ H_3PO_4 \times \frac{1\,mole}{N_A} \times \frac{4\ O\ atoms}{1\ H_3PO_4}$

Shorthand for Avogadro's # (6.02×10^{23})

$\times \frac{15.999\,g\ O}{1\,mole}$

$= 106\,g$ of O atoms

(6) $9.3\,g \times \frac{1\ mole}{79.918\ g\ BeCl_2} \times \frac{6.02\times10^{23}\ mlc}{1\ mole} \times \frac{2\ Cl\ atoms}{1\ BeCl_2\ mlc}$

$= 1.4\times10^{23}\ Cl\ atoms$

(7) $225\,L \times \frac{1\ mole}{24.5\,L} \times \frac{64.064\,g\ SO_2}{1\ mole} = 588\,g$

(8) $75.0\,L \times \frac{1\ mole}{22.4\,L} \times \frac{6.02\times10^{23}\ mlc}{1\ mole}$

$= 2.02\times10^{24}\ mlc$

(9) $\frac{32.118\,g\ Sitty}{1\ mole} \times \frac{1\ mole}{24.5\,L} = \frac{1.31\,g}{L}$

(10) $\frac{3.56\,g}{L} \times \frac{22.4\,L}{1\ mole} = \frac{79.744\,g}{mole}$

Bromine? No!
Bromine is diatomic and would be $\frac{159.808\,g}{mole}$

must be some combination of elements that adds up to 80 g/mole and is a gas