1) $\left(\frac{150.0\text{ g } Cu(C_2H_3O_2)_2}{1}\right)\left(\frac{1\text{ mole } Cu(C_2H_3O_2)_2}{181.6\text{ g } Cu(C_2H_3O_2)_2}\right) = \boxed{.8260\text{ mole } Cu(C_2H_3O_2)_2}$

$\left(\frac{.8260\text{ mole } Cu(C_2H_3O_2)_2}{1}\right)\left(\frac{6.02\times10^{23}\text{ Fu } Cu(C_2H_3O_2)_2}{1\text{ mole } Cu(C_2H_3O_2)_2}\right) = \boxed{4.973\times10^{23}\ Cu(C_2H_3O_2)_2}$

$\left(\frac{.8260\text{ mole } Cu(C_2H_3O_2)_2}{1}\right)\left(\frac{4\text{ mole O}}{1\text{ mole } Cu(C_2H_3O_2)_2}\right)\left(\frac{16.0\text{ g O}}{1\text{ mole O}}\right) = \boxed{52.9\text{ g O}}$

$\left(\frac{.8260\text{ mole } Cu(C_2H_3O_2)_2}{1}\right)\left(\frac{4\text{ mole C}}{1\text{ mole } Cu(C_2H_3O_2)_2}\right)\left(\frac{6.02\times10^{23}\text{ Atoms Cu}}{1\text{ mole C}}\right) = \boxed{1.989\times10^{24}\text{ Atoms Cu}}$

2) $\left(\frac{7\text{ moles } Ba(NO_3)_2}{1}\right)\left(\frac{261.3\text{ g } Ba(NO_3)_2}{1\text{ mole } Ba(NO_3)_2}\right) = \boxed{2000\text{ g } Ba(NO_3)_2}$

$\left(\frac{7\text{ moles } Ba(NO_3)_2}{1}\right)\left(\frac{6.02\times10^{23}\text{ Fu. } Ba(NO_3)_2}{1\text{ mole } Ba(NO_3)_2}\right) = \boxed{4\times10^{24}\text{ Fu. } Ba(NO_3)_2}$

$\left(\frac{7\text{ moles } Ba(NO_3)_2}{1}\right)\left(\frac{6\text{ mole O}}{1\text{ mole } Ba(NO_3)_2}\right) = \boxed{40\text{ mole O}}$

$\left(\frac{7\text{ moles } Ba(NO_3)_2}{1}\right)\left(\frac{1\text{ mole Ba}}{1\text{ mole } Ba(NO_3)_2}\right)\left(\frac{137.3\text{ g Ba}}{1\text{ mole Ba}}\right) = 961.1 \rightarrow \boxed{1000\text{ g Ba}}$

$$\left(\frac{1.24\times10^{24}\ \text{Atom Mn}}{1}\right)\left(\frac{1\ \text{mole Mn}}{6.02\times10^{23}\ \text{Atom Mn}}\right)\left(\frac{1\ \text{mole } Mn_2(SO_4)_3}{2\ \text{mole Mn}}\right) = \boxed{1.03\ \text{mole } Mn_2(SO_4)_3}$$

$$\left(\frac{1.03\ \text{mole } Mn_2(SO_4)_3}{1}\right)\left(\frac{398.1\ \text{g } Mn_2(SO_4)_3}{1\ \text{mole } Mn_2(SO_4)_3}\right) = \boxed{410.\ \text{g } Mn_2(SO_4)_3}$$