① $CaC_2 + 2H_2O \rightarrow C_2H_2 + Ca(OH)_2$

5.0g ?g

$(5.0\,g\,CaC_2)\left(\frac{1\,mol\,CaC_2}{64\,g\,CaC_2}\right) = 0.078\,mol\,CaC_2$

$(0.078\,mol\,CaC_2)\left(\frac{1\,mol\,C_2H_2}{1\,mol\,CaC_2}\right) = 0.078\,mol\,C_2H_2$

$(0.078\,mol\,C_2H_2)\left(\frac{26\,g\,C_2H_2}{1\,mol\,C_2H_2}\right) = 2.03\,g\,C_2H_2$

~~②~~ ③ $3CaCO_3 + 2H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 3CO_2 + 3H_2O$

g? 0.773g

$(0.773\,g\,H_2O)\left(\frac{1\,mol\,H_2O}{18\,g\,H_2O}\right) = 0.043\,mol\,H_2O$

$(0.043\,mol\,H_2O)\left(\frac{3\,mol\,CO_2}{3\,mol\,H_2O}\right) = 0.043\,mol\,CO_2$

$(0.043\,mol\,CO_2)\left(\frac{44\,g\,CO_2}{1\,mol\,CO_2}\right) = 1.9\,g\,CO_2$

out of order happens when you get interrupted!

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② $3CaCO_3 + 2H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 3CO_2 + 3H_2O$

g? 3.74g

$(3.74\,g\,Ca_3(PO_4)_2)\left(\frac{1\,mol\,Ca_3(PO_4)_2}{310\,g\,Ca_3(PO_4)_2}\right) = 0.0121\,mol\,Ca_3(PO_4)_2$

$(0.0121\,mol\,Ca_3(PO_4)_2)\left(\frac{2\,mol\,H_3PO_4}{1\,mol\,Ca_3(PO_4)_2}\right) = 0.0242\,mol\,H_3PO_4$

$(0.0242\,mol\,H_3PO_4)\left(\frac{98\,g\,H_3PO_4}{1\,mol\,H_3PO_4}\right) = 2.37\,g\,H_3PO_4$

(4) $Sb_2S_3 + 3Fe \rightarrow 2Sb + 3FeS$

15.0 g vs ? g

$(15.0\ g\ Sb_2S_3)\left(\frac{1\ mol\ Sb_2S_3}{339.8\ g\ Sb_2S_3}\right) = 0.044\ mol\ Sb_2S_3$

$(0.044\ mol\ Sb_2S_3)\left(\frac{2\ mol\ Sb}{1\ mol\ Sb_2S_3}\right) = 0.088\ mol\ Sb$

$(0.088\ mol\ Sb)\left(\frac{121.8\ g\ Sb}{1\ mol\ Sb}\right) = 10.72\ g\ Sb$

(5) $Sb_2S_3 + 3Fe \rightarrow 2Sb + 3FeS$

? g 9.84 g

$(9.84\ g\ Sb)\left(\frac{1\ mol\ Sb}{121.8\ g\ Sb}\right) = 0.0808\ mol\ Sb$

$(0.0808\ mol\ Sb)\left(\frac{3\ mol\ Fe}{2\ mol\ Sb}\right) = 0.1212\ mol\ Fe$

$(0.1212\ mol\ Fe)\left(\frac{55.85\ g\ Fe}{1\ mol\ Fe}\right) = 6.77\ g\ Fe$

(6) $4Zn + 10HNO_3 \rightarrow 4Zn(NO_3)_2 + NH_4NO_3 + 3H_2O$

g? 1.49 g

$(1.49\ g\ HNO_3)\left(\frac{1\ mol\ HNO_3}{63\ g\ HNO_3}\right) = 0.024\ mol\ HNO_3$

$(0.024\ mol\ HNO_3)\left(\frac{4\ mol\ Zn}{10\ mol\ HNO_3}\right) = 0.0096\ mol\ Zn$

$(0.0096\ mol\ Zn)\left(\frac{65.4\ g\ Zn}{1\ mol\ Zn}\right) = 0.63\ g\ Zn$

(7) $4Zn + 10HNO_3 \rightarrow 4Zn(NO_3)_2 + NH_4NO_3 + 3H_2O$

? g 29.1 g

$(29.1\ g\ NH_4NO_3)\left(\frac{1\ mol\ NH_4NO_3}{80\ g\ NH_4NO_3}\right) = 0.364\ mol\ NH_4NO_3$

$(0.364\ mol\ NH_4NO_3)\left(\frac{10\ mol\ HNO_3}{1\ mol\ NH_4NO_3}\right) = 3.64\ mol\ HNO_3$

$(3.64\ mol\ HNO_3)\left(\frac{63\ g\ HNO_3}{1\ mol\ HNO_3}\right) = 229.3\ g\ HNO_3$