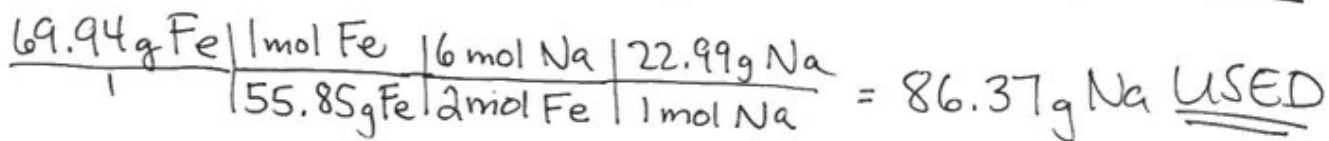
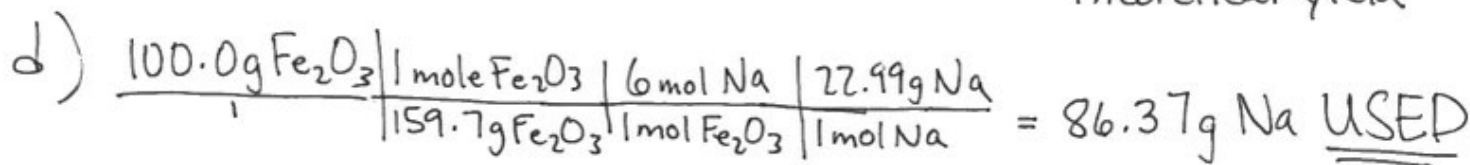
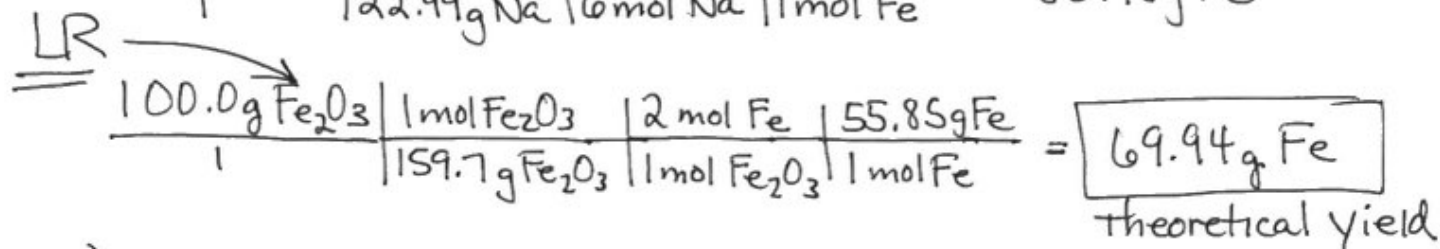
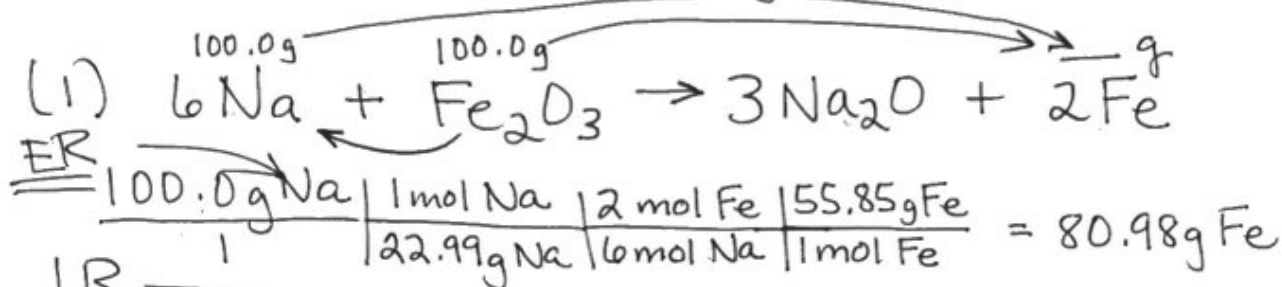
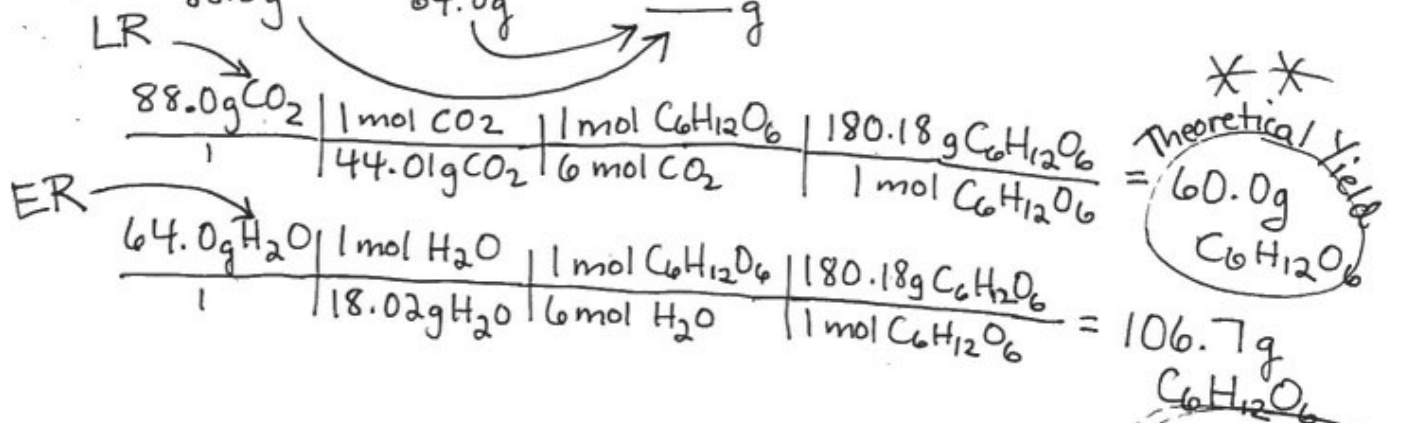
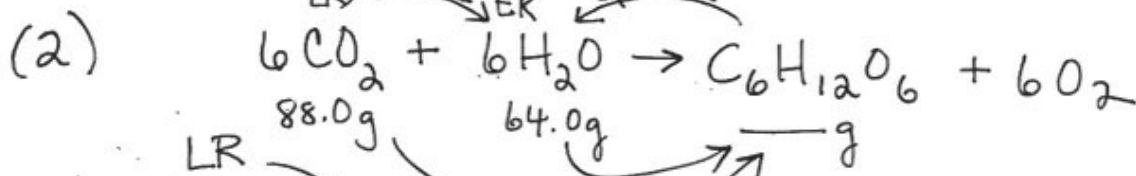


Stoichiometry Problems 3

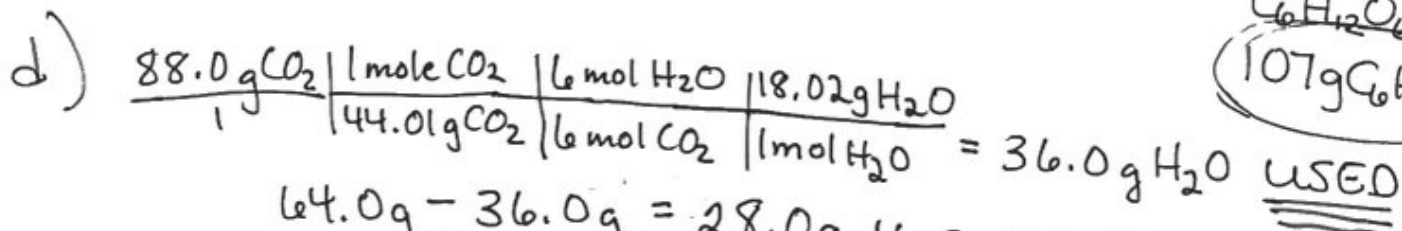
Key



$100.0\text{g} - 86.37\text{g} = 13.6\text{g Na EXCESS}$
available - used = left over

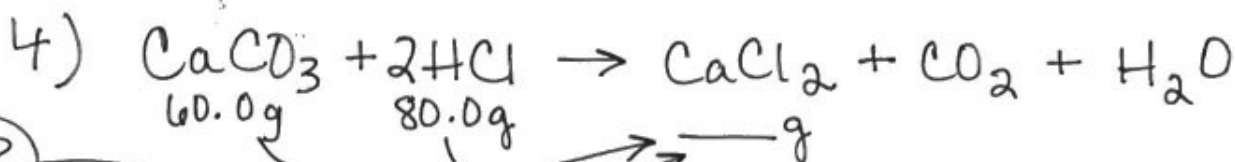


Theoretical Yield
C₆H₁₂O₆
= 60.0g



$64.0\text{g} - 36.0\text{g} = 28.0\text{g H}_2\text{O excess}$
available - used = excess

107g C₆H₁₂O₆



LR

$$\frac{60.0\text{g CaCO}_3}{1} \times \frac{1\text{ mol CaCO}_3}{100.09\text{g CaCO}_3} \times \frac{1\text{ mol CaCl}_2}{1\text{ mol CaCO}_3} \times \frac{110.98\text{g CaCl}_2}{1\text{ mol CaCl}_2} = 66.5\text{g CaCl}_2$$

theoretical yield

ER

$$\frac{80.0\text{g HCl}}{1} \times \frac{1\text{ mol HCl}}{36.46\text{g HCl}} \times \frac{1\text{ mol CaCl}_2}{2\text{ mol HCl}} \times \frac{110.98\text{g CaCl}_2}{1\text{ mol CaCl}_2} = 121.8$$

122g CaCl₂

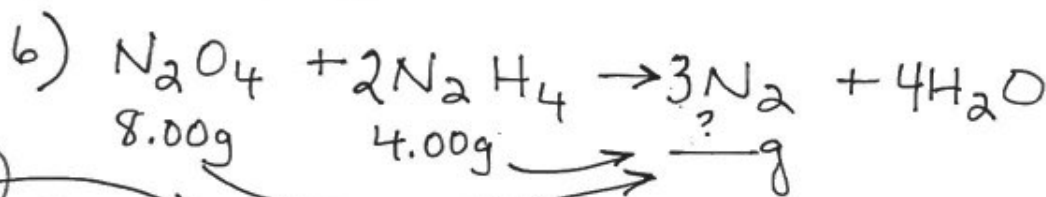
d)

$$\frac{60.0\text{g CaCO}_3}{1} \times \frac{1\text{ mol CaCO}_3}{100.09\text{g CaCO}_3} \times \frac{2\text{ mol HCl}}{1\text{ mol CaCO}_3} \times \frac{36.46\text{g HCl}}{1\text{ mol HCl}} = 43.7\text{g HCl USED}$$

$$60.0\text{g} - 43.7\text{g} = 16.3\text{g EXCESS}$$

available - used = excess

5) on last page



ER

$$\frac{8.00\text{g N}_2\text{O}_4}{1} \times \frac{1\text{ mol N}_2\text{O}_4}{92.02\text{g N}_2\text{O}_4} \times \frac{3\text{ mol N}_2}{1\text{ mol N}_2\text{O}_4} \times \frac{28.02\text{g N}_2}{1\text{ mol N}_2} = 7.31\text{g N}_2$$

LR

$$\frac{4.00\text{g N}_2\text{H}_4}{1} \times \frac{1\text{ mol N}_2\text{H}_4}{32.06\text{g N}_2\text{H}_4} \times \frac{3\text{ mol N}_2}{2\text{ mol N}_2\text{H}_4} \times \frac{28.02\text{g N}_2}{1\text{ mol N}_2} = 5.24\text{g N}_2$$

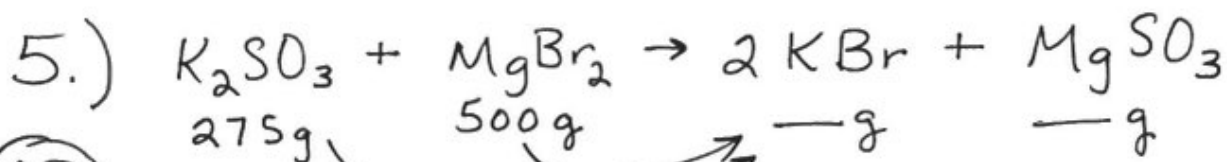
Theoretical yield

b iii)

$$\frac{4.00\text{g N}_2\text{H}_4}{1} \times \frac{1\text{ mol N}_2\text{H}_4}{32.06\text{g N}_2\text{H}_4} \times \frac{1\text{ mol N}_2\text{O}_4}{2\text{ mol N}_2\text{H}_4} \times \frac{92.02\text{g N}_2\text{O}_4}{1\text{ mol N}_2\text{O}_4} = 5.74\text{g N}_2\text{O}_4$$

$$8.00\text{g} - 5.74\text{g} = 2.26\text{g N}_2\text{O}_4 \text{ EXCESS}$$

N₂O₄ used



LR

275g

500g

—g

—g

theoretical yield

$$\frac{275 \text{ g K}_2\text{SO}_3}{1} \times \frac{1 \text{ mol K}_2\text{SO}_3}{158.26 \text{ g K}_2\text{SO}_3} \times \frac{2 \text{ mol KBr}}{1 \text{ mol K}_2\text{SO}_3} \times \frac{119.00 \text{ g KBr}}{1 \text{ mol KBr}} = 414 \text{ g KBr}$$

ER

$$\frac{500 \text{ g MgBr}_2}{1} \times \frac{1 \text{ mol MgBr}_2}{184.10 \text{ g MgBr}_2} \times \frac{2 \text{ mol KBr}}{1 \text{ mol MgBr}_2} \times \frac{119.00 \text{ g KBr}}{1 \text{ mol KBr}} = 647 \text{ g KBr}$$

d)

$$\frac{275 \text{ g K}_2\text{SO}_3}{1} \times \frac{1 \text{ mol K}_2\text{SO}_3}{158.26 \text{ g K}_2\text{SO}_3} \times \frac{1 \text{ mol MgBr}_2}{1 \text{ mol K}_2\text{SO}_3} \times \frac{184.10 \text{ g MgBr}_2}{1 \text{ mol MgBr}_2} = 319.9$$

320 g MgBr₂

used

$$500 \text{ g} - 320 \text{ g} = 180 \text{ g MgBr}_2 \text{ excess}$$