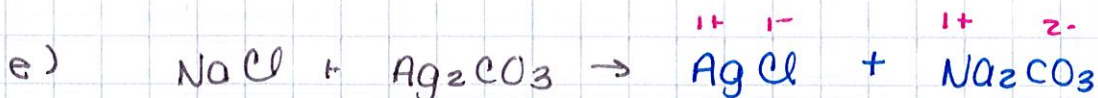
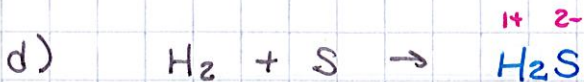
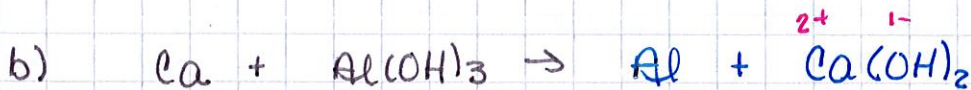
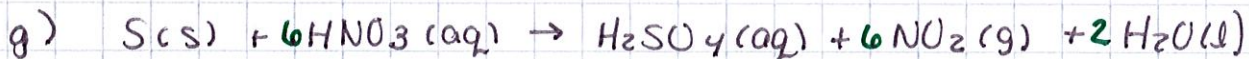
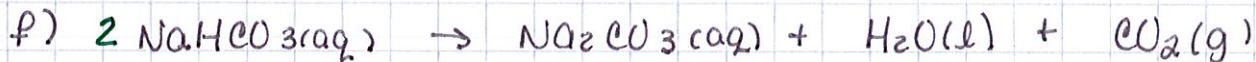
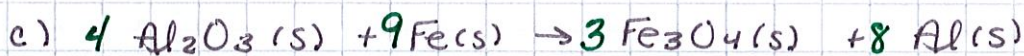
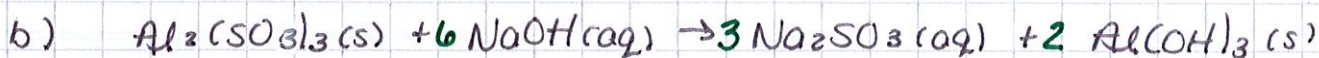
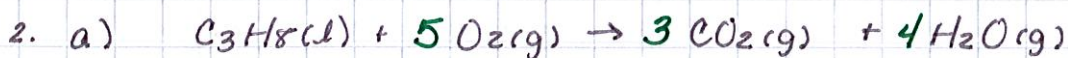


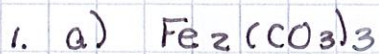
Key - Study Guide for the Reaction Stoichiometry Test.

Chemical Reactions

1. 4 pieces of evidence of a chemical reaction are:
- gas bubbles form
 - a solid precipitate forms
 - a change in energy (gets hotter or colder)
 - formation of water
 - odor change
 - permanent color change



moles

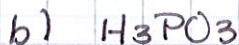


$$\text{Fe } 2 \times 55.85 \text{ g} = 111.70 \text{ g}$$

$$\text{C } 3 \times 12.01 \text{ g} = 36.03 \text{ g}$$

$$\text{O } 9 \times 16.00 \text{ g} = + 144.00 \text{ g}$$

$$\underline{291.73 \text{ g}}$$

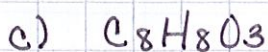


$$\text{H } 3 \times 1.01 \text{ g} = 3.03 \text{ g}$$

$$\text{P } 1 \times 30.97 \text{ g} = 30.97 \text{ g}$$

$$\text{O } 3 \times 16.00 \text{ g} = + 48.00 \text{ g}$$

$$\underline{82.00 \text{ g}}$$



$$\text{C } 8 \times 12.01 \text{ g} = 96.08 \text{ g}$$

$$\text{H } 8 \times 1.01 \text{ g} = 8.08 \text{ g}$$

$$\text{O } 3 \times 16.00 \text{ g} = + 48.00 \text{ g}$$

$$\underline{152.16 \text{ g}}$$

2. $\% \text{C} = \frac{36.03 \text{ g}}{291.73 \text{ g}} \times 100 = 12.35\%$

3. $\% \text{P} = \frac{30.97 \text{ g}}{82.00 \text{ g}} \times 100 = 37.77\%$

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

5. $59.0\% \text{ C}$

$$\frac{59.0 \text{ g C}}{12.01 \text{ g/mol}}$$

$$= \frac{4.9126 \text{ mol C}}{.5460 \text{ mol}}$$

$$= 9 \text{ C}$$

$$7.15\% \text{ H}$$

$$\frac{7.15 \text{ g H}}{1.01 \text{ g/mol}}$$

$$= \frac{7.0792 \text{ mol H}}{.5460 \text{ mol}}$$

$$= 13 \text{ H}$$

$$26.20\% \text{ O}$$

$$\frac{26.20 \text{ g O}}{16.00 \text{ g/mol}}$$

$$= \frac{1.6375 \text{ mol O}}{.5460 \text{ mol}}$$

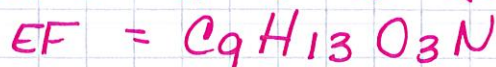
$$= 3 \text{ O}$$

$$7.65\% \text{ N}$$

$$\frac{7.65 \text{ g N}}{14.01 \text{ g/mol}}$$

$$= \frac{.5460 \text{ mol N}}{.5460 \text{ mol}}$$

$$= 1 \text{ N}$$



6. $74.0\% \text{C}$
 $\frac{74.0 \text{ g C}}{12.01 \text{ g/mol}}$

$8.65\% \text{H}$
 $\frac{8.65 \text{ g H}}{1.01 \text{ g/mol}}$

$17.35\% \text{N}$
 $\frac{17.35 \text{ g N}}{14.01 \text{ g/mol}}$

$= \frac{6.1615 \text{ mol C}}{1.2384 \text{ mol}}$

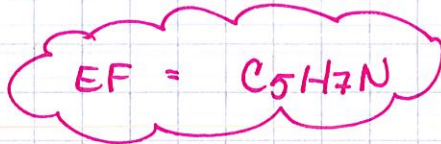
$= \frac{8.5644 \text{ mol H}}{1.2384 \text{ mol}}$

$= \frac{1.2384 \text{ mol N}}{1.2384 \text{ mol}}$

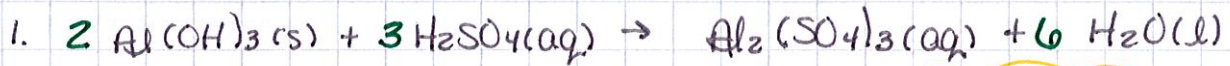
$= 5 \text{ C}$

$= 7 \text{ H}$

$= 1 \text{ N}$



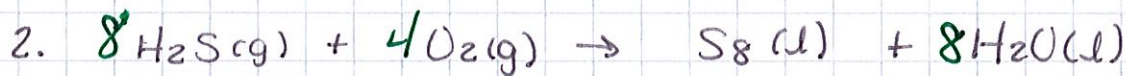
stoichiometry



a) $\frac{.99 \text{ mol Al(OH)}_3}{2 \text{ mol Al(OH)}_3} \times \frac{6 \text{ mol H}_2\text{O}}{1 \text{ mol Al(OH)}_3} = 2.97 \text{ mol H}_2\text{O}$

b) $\frac{2.40 \text{ mol H}_2\text{SO}_4}{3 \text{ mol H}_2\text{SO}_4} \times \frac{2 \text{ mol Al(OH)}_3}{1 \text{ mol H}_2\text{SO}_4} = 16.00 \text{ mol Al(OH)}_3$

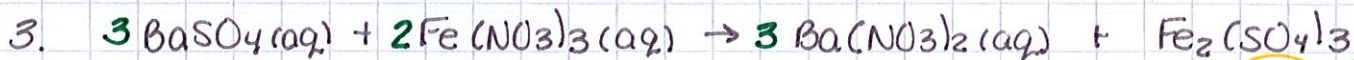
c) $\frac{.04466 \text{ mol H}_2\text{SO}_4}{3 \text{ mol H}_2\text{SO}_4} \times \frac{1 \text{ mol Al}_2(\text{SO}_4)_3}{1 \text{ mol H}_2\text{SO}_4} = .01489 \text{ mol Al}_2(\text{SO}_4)_3$



a) $\frac{2.500 \text{ mol H}_2\text{S}}{8 \text{ mol H}_2\text{S}} \times \frac{1 \text{ mol S}_8}{1 \text{ mol H}_2\text{S}} \times \frac{256.56 \text{ g S}_8}{1 \text{ mol S}_8} = 80.18 \text{ g S}_8$

b) $\frac{2.500 \text{ g O}_2}{32.00 \text{ g O}_2} \times \frac{1 \text{ mol O}_2}{1 \text{ mol O}_2} \times \frac{8 \text{ mol H}_2\text{O}}{4 \text{ mol O}_2} = .16 \text{ mol H}_2\text{O}$

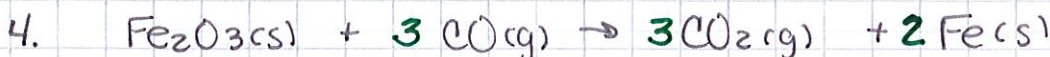
c) $\frac{.776 \text{ mol H}_2\text{S}}{8 \text{ mol H}_2\text{S}} \times \frac{4 \text{ mol O}_2}{1 \text{ mol H}_2\text{S}} \times \frac{32.00 \text{ g O}_2}{1 \text{ mol O}_2} = 12.42 \text{ g O}_2$



a) $\frac{50.0 \text{ g Fe}(\text{NO}_3)_3}{241.88 \text{ g Fe}(\text{NO}_3)_3} \times \frac{1 \text{ mol Fe}(\text{NO}_3)_3}{1 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{3 \text{ mol Ba}(\text{NO}_3)_2}{2 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{261.22 \text{ g Ba}(\text{NO}_3)_2}{1 \text{ mol Ba}(\text{NO}_3)_2} = 81.00 \text{ g Ba}(\text{NO}_3)_2$

b) $\frac{34.50 \text{ g BaSO}_4}{233.27 \text{ g BaSO}_4} \times \frac{1 \text{ mol BaSO}_4}{1 \text{ mol BaSO}_4} \times \frac{1 \text{ mol Fe}_2(\text{SO}_4)_3}{3 \text{ mol BaSO}_4} \times \frac{399.91 \text{ g Fe}_2(\text{SO}_4)_3}{1 \text{ mol Fe}_2(\text{SO}_4)_3} = 19.72 \text{ g Fe}_2(\text{SO}_4)_3$

c) $\frac{34.50 \text{ g Fe}(\text{NO}_3)_3}{241.88 \text{ g Fe}(\text{NO}_3)_3} \times \frac{1 \text{ mol Fe}(\text{NO}_3)_3}{1 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{1 \text{ mol Fe}_2(\text{SO}_4)_3}{2 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{399.91 \text{ g Fe}_2(\text{SO}_4)_3}{1 \text{ mol Fe}_2(\text{SO}_4)_3} = 28.52 \text{ g Fe}_2(\text{SO}_4)_3$



a) i) $\frac{30.00 \text{ g Fe}_2\text{O}_3}{159.70 \text{ g Fe}_2\text{O}_3} \times \frac{1 \text{ mol Fe}_2\text{O}_3}{1 \text{ mol Fe}_2\text{O}_3} \times \frac{2 \text{ mol Fe}}{1 \text{ mol Fe}_2\text{O}_3} \times \frac{55.85 \text{ g Fe}}{1 \text{ mol Fe}} = 20.98 \text{ g Fe}$ TV

$\frac{20.00 \text{ g CO}}{20.01 \text{ g CO}} \times \frac{1 \text{ mol CO}}{1 \text{ mol CO}} \times \frac{2 \text{ mol Fe}}{3 \text{ mol CO}} \times \frac{55.85 \text{ g Fe}}{1 \text{ mol Fe}} = 37.21 \text{ g Fe}$

ii) LR is Fe_2O_3

iii) ER is CO

iv) % yield = $\frac{11.98 \text{ g}}{20.98 \text{ g}} \times 100 = 57.10\%$

b) i) $\frac{.1000 \text{ g Fe}_2\text{O}_3}{159.70 \text{ g Fe}_2\text{O}_3} \times \frac{1 \text{ mol Fe}_2\text{O}_3}{1 \text{ mol Fe}_2\text{O}_3} \times \frac{2 \text{ mol Fe}}{1 \text{ mol Fe}_2\text{O}_3} \times \frac{55.85 \text{ g Fe}}{1 \text{ mol Fe}} = .06994 \text{ g Fe}$ TV

$\frac{.1700 \text{ g CO}}{20.01 \text{ g CO}} \times \frac{1 \text{ mol CO}}{1 \text{ mol CO}} \times \frac{2 \text{ mol Fe}}{3 \text{ mol CO}} \times \frac{55.85 \text{ g Fe}}{1 \text{ mol Fe}} = .3163 \text{ g Fe}$

ii) LR is Fe_2O_3

iii) ER is CO

iv) % yield = $\frac{.05880 \text{ g}}{.06994 \text{ g}} \times 100 = 84.07\%$