

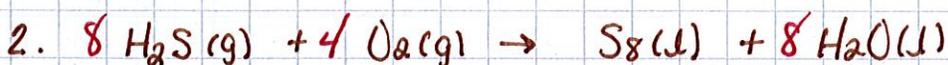
Key - Study Guide for Stoichiometry Test



A. $\frac{.99 \text{ mol Al}(\text{OH})_3}{1 \text{ mol Al}(\text{OH})_3} \times \frac{6 \text{ mol H}_2\text{O}}{2 \text{ mol Al}(\text{OH})_3} = 3.0 \text{ mol H}_2\text{O}$

B. $\frac{2.40 \text{ mol H}_2\text{SO}_4}{3 \text{ mol H}_2\text{SO}_4} \times \frac{2 \text{ mol Al}(\text{OH})_3}{2 \text{ mol Al}(\text{OH})_3} = 1.60 \text{ mol Al}(\text{OH})_3$

C. $\frac{.04466 \text{ mol H}_2\text{SO}_4}{3 \text{ mol H}_2\text{SO}_4} \times \frac{1 \text{ mol Al}_2(\text{SO}_4)_3}{1 \text{ mol Al}_2(\text{SO}_4)_3} = 0.01489 \text{ mol Al}_2(\text{SO}_4)_3$



A. $\frac{2.50 \text{ mol H}_2\text{S}}{8 \text{ mol H}_2\text{S}} \times \frac{1 \text{ mol S}_8}{1 \text{ mol S}_8} \times \frac{256.56 \text{ g S}_8}{1 \text{ mol S}_8} = 80.2 \text{ g S}_8$

B. $\frac{2.500 \text{ g O}_2}{32.00 \text{ g O}_2} \times \frac{1 \text{ mol O}_2}{1 \text{ mol O}_2} \times \frac{8 \text{ mol H}_2\text{O}}{4 \text{ mol O}_2} = .1563 \text{ mol H}_2\text{O}$

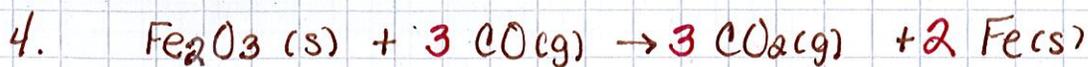
C. $\frac{.776 \text{ mol H}_2\text{S}}{8 \text{ mol H}_2\text{S}} \times \frac{4 \text{ mol O}_2}{1 \text{ mol O}_2} \times \frac{32.00 \text{ g O}_2}{1 \text{ mol O}_2} = 12.4 \text{ g O}_2$



A. $\frac{50.0 \text{ g Fe}(\text{NO}_3)_3}{241.88 \text{ g Fe}(\text{NO}_3)_3} \times \frac{1 \text{ mol Fe}(\text{NO}_3)_3}{1 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{3 \text{ mol Ba}(\text{NO}_3)_2}{2 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{261.35 \text{ g Ba}(\text{NO}_3)_2}{1 \text{ mol Ba}(\text{NO}_3)_2} = 81.0 \text{ g Ba}(\text{NO}_3)_2$

B. $\frac{34.50 \text{ g BaSO}_4}{233.40 \text{ g BaSO}_4} \times \frac{1 \text{ mol BaSO}_4}{1 \text{ mol BaSO}_4} \times \frac{1 \text{ mol Fe}_2(\text{SO}_4)_3}{3 \text{ mol BaSO}_4} \times \frac{399.91 \text{ g Fe}_2(\text{SO}_4)_3}{1 \text{ mol Fe}_2(\text{SO}_4)_3} = 19.70 \text{ g Fe}_2(\text{SO}_4)_3$

C. $\frac{34.50 \text{ g Fe}(\text{NO}_3)_3}{241.88 \text{ g Fe}(\text{NO}_3)_3} \times \frac{1 \text{ mol Fe}(\text{NO}_3)_3}{1 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{1 \text{ mol Fe}_2(\text{SO}_4)_3}{2 \text{ mol Fe}(\text{NO}_3)_3} \times \frac{261.35 \text{ g Fe}_2(\text{SO}_4)_3}{1 \text{ mol Fe}_2(\text{SO}_4)_3} = 18.64 \text{ g Fe}_2(\text{SO}_4)_3$



A. $\frac{30.00 \text{g Fe}_2\text{O}_3}{159.70 \text{g Fe}_2\text{O}_3} \times \frac{1 \text{mol Fe}_2\text{O}_3}{1 \text{mol Fe}_2\text{O}_3} \times \frac{2 \text{mol Fe}}{1 \text{mol Fe}_2\text{O}_3} \times \frac{55.85 \text{g Fe}}{1 \text{mol Fe}} = 20.98 \text{g Fe}$

$\frac{20.00 \text{g CO}}{28.01 \text{g CO}} \times \frac{1 \text{mol CO}}{3 \text{mol CO}} \times \frac{2 \text{mol Fe}}{1 \text{mol Fe}} \times \frac{55.85 \text{g Fe}}{1 \text{mol Fe}} = 26.59 \text{g Fe}$

i) Theoretical Yield = 20.98 g Fe

ii) Limiting Reactant = Fe_2O_3

iii) Excess Reactant = CO

iv)

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

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

$\frac{.1700 \text{g CO}}{28.01 \text{g CO}} \times \frac{1 \text{mol CO}}{3 \text{mol CO}} \times \frac{2 \text{mol Fe}}{1 \text{mol Fe}} \times \frac{55.85 \text{g Fe}}{1 \text{mol Fe}} = .2260 \text{g Fe}$

i) Theoretical Yield = .06994 g Fe

ii) Limiting Reactant = Fe_2O_3

iii) Excess Reactant = CO

iv)

$\% \text{ yield} = \frac{.09880 \text{g}}{.06994 \text{g}} \times 100 = 141.3\%$