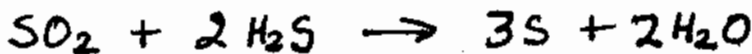


HW Exercise

(Chemical Stoichiometry)

1.



$$(a) \quad 1.0 \text{ mol H}_2\text{S} \times \left(\frac{3 \text{ mol S}}{2 \text{ mol H}_2\text{S}} \right) = \boxed{1.5 \text{ mol S}}$$

$$(b) \quad 0.500 \text{ mol H}_2\text{S} \times \left(\frac{3 \text{ mol S}}{2 \text{ mol H}_2\text{S}} \right) = \boxed{0.750 \text{ mol S}}$$

$$(c) \quad 10.0 \text{ g H}_2\text{S} \times \left(\frac{1 \text{ mol H}_2\text{S}}{34.1 \text{ g}} \right) \times \left(\frac{1 \text{ mol SO}_2}{2 \text{ mol H}_2\text{S}} \right) \times \left(\frac{64.1 \text{ g}}{1 \text{ mol SO}_2} \right) = \boxed{9.40 \text{ g SO}_2}$$

$$(d) \quad 12.0 \text{ g S} \times \left(\frac{1 \text{ mol S}}{32.1 \text{ g}} \right) \times \left(\frac{2 \text{ mol H}_2\text{S}}{3 \text{ mol S}} \right) \times \left(\frac{34.1 \text{ g}}{1 \text{ mol H}_2\text{S}} \right) = \boxed{8.50 \text{ g H}_2\text{S}}$$

$$(e) \quad 6.00 \text{ g S} \times \left(\frac{1 \text{ mol S}}{32.1 \text{ g}} \right) \times \left(\frac{1 \text{ mol SO}_2}{3 \text{ mol S}} \right) \times \left(\frac{64.1 \text{ g}}{1 \text{ mol SO}_2} \right) = \boxed{3.99 \text{ g SO}_2}$$

2.



$$(a) \quad 4.26 \text{ mol C}_4\text{H}_{10} \times \left(\frac{13 \text{ mol O}_2}{2 \text{ mol C}_4\text{H}_{10}} \right) = \boxed{27.7 \text{ mol O}_2}$$

$$(b) \quad 4.26 \text{ mol C}_4\text{H}_{10} \times \left(\frac{8 \text{ mol CO}_2}{2 \text{ mol C}_4\text{H}_{10}} \right) = \boxed{17.0 \text{ mol CO}_2}$$

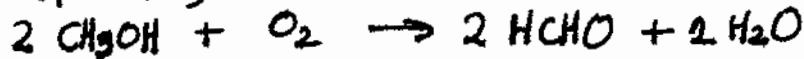
$$(c) \quad 4.26 \text{ mol C}_4\text{H}_{10} \times \left(\frac{10 \text{ mol H}_2\text{O}}{2 \text{ mol C}_4\text{H}_{10}} \right) = \boxed{21.3 \text{ mol H}_2\text{O}}$$

$$(d) \quad 2.00 \text{ mol C}_4\text{H}_{10} \times \left(\frac{13 \text{ mol O}_2}{2 \text{ mol C}_4\text{H}_{10}} \right) \times \left(\frac{32.0 \text{ g}}{1 \text{ mol O}_2} \right) = \boxed{416. \text{ g O}_2}$$

$$(e) \quad 203 \text{ g O}_2 \times \left(\frac{1 \text{ mol O}_2}{32.0 \text{ g}} \right) \times \left(\frac{2 \text{ mol C}_4\text{H}_{10}}{13 \text{ mol O}_2} \right) \times \left(\frac{58.0 \text{ g}}{1 \text{ mol C}_4\text{H}_{10}} \right) = \boxed{56.6 \text{ g C}_4\text{H}_{10}}$$

$$(f) \quad 100 \text{ g C}_4\text{H}_{10} \times \left(\frac{1 \text{ mol C}_4\text{H}_{10}}{58.0 \text{ g}} \right) \times \left(\frac{8 \text{ mol CO}_2}{2 \text{ mol C}_4\text{H}_{10}} \right) \times \left(\frac{44.0 \text{ g}}{1 \text{ mol CO}_2} \right) = \boxed{303 \text{ g CO}_2}$$

9.29 (p257),



$$397 \text{ kg CH}_3\text{OH} \times \left(\frac{1 \text{ mol CH}_3\text{OH}}{32.0 \text{ kg}} \right) \times \left(\frac{2 \text{ mol HCHO}}{2 \text{ mol CH}_3\text{OH}} \right) \times \left(\frac{30.0 \text{ kg}}{1 \text{ mol HCHO}} \right) \\ \times \left(\frac{84.9}{100} \right) = \boxed{316 \text{ kg HCHO}}$$

9.32 (p257),



$$188 \text{ g HNO}_3 \times \left(\frac{1 \text{ mol HNO}_3}{63.0 \text{ g}} \right) \times \left(\frac{1 \text{ mol Na}_2\text{CO}_3}{2 \text{ mol HNO}_3} \right) \times \left(\frac{106 \text{ g}}{1 \text{ mol Na}_2\text{CO}_3} \right) \\ = 158 \text{ g Na}_2\text{CO}_3$$

No, 135 g Na_2CO_3 is NOT enough to neutralize 135 g of HNO_3

$$188 \text{ g HNO}_3 \times \left(\frac{1 \text{ mol HNO}_3}{63.0 \text{ g}} \right) \times \left(\frac{1 \text{ mol CO}_2}{2 \text{ mol HNO}_3} \right) \times \left(\frac{44.0 \text{ g}}{1 \text{ mol CO}_2} \right) \\ = \boxed{65.7 \text{ g CO}_2}$$