

Chem11 Stoichiometry : W.S. - 40

1) Given the reaction : $2\text{Al} + 3\text{Br}_2 \rightarrow 2\text{AlBr}_3$

a) If 54.0 g of Al reacts with 479.4 g of Br_2 then the amount of AlBr_3 formed is _____ .

b) If 162 g of Al reacts with sufficient Br_2 , then the amount of AlBr_3 formed is _____ .

2) Given the reaction : $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$

a) If 7.5 tonnes (1 t = 1000 kg) of iron ore produces 5.2 t of iron and 6.2 t of carbon dioxide, then _____ t of carbon monoxide was required.

b) Write down the "moles equation".

_____ mol Fe_2O_3 + _____ mol $\text{CO} \rightarrow$ _____ mol Fe + _____ mol CO_2

c) Write down the "mass equation".

_____ g Fe_2O_3 + _____ g $\text{CO} \rightarrow$ _____ g Fe + _____ g CO_2

3) Given the equation : $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$

Fill in the blanks.

a) 2 mol C_2H_6 + _____ mol $\text{O}_2 \rightarrow$ _____ mol CO_2 + _____ mol H_2O

b) _____ mol C_2H_6 + _____ mol $\text{O}_2 \rightarrow$ _____ mol CO_2 + 1.5 mol H_2O

c) _____ mol C_2H_6 + 1.8×10^7 mol $\text{O}_2 \rightarrow$ _____ mol CO_2 + _____ mol H_2O

d) _____ mol C_2H_6 + _____ mol $\text{O}_2 \rightarrow$ 5.2×10^{-4} mol CO_2 + _____ mol H_2O

4) Fill in the blanks using the equation in question 3).

a) _____ g C_2H_6 + 224 g $\text{O}_2 \rightarrow$ _____ g CO_2 + _____ g H_2O

b) _____ g C_2H_6 + _____ g $\text{O}_2 \rightarrow$ _____ g CO_2 + 36.0 g H_2O

c) 0.00480 g C_2H_6 + _____ g $\text{O}_2 \rightarrow$ _____ g CO_2 + _____ g H_2O

d) _____ g C_2H_6 + _____ g $\text{O}_2 \rightarrow$ 8530 g CO_2 + _____ g H_2O

Answers : 1)a) 533.4 g, b) 1.60×10^3 g, 2)a) 3.9, b) 1, 3, 2, 3, c) 159.7, 84.0, 111.7, 132.0, 3)a) 7, 4, 6, b) 0.50, 1.8, 1.0, c) 5.0×10^6 , 1.0×10^7 , 1.5×10^7 , d) 2.6×10^{-4} , 9.1×10^{-4} , 7.8×10^{-4} , 4)a) 60.0, 176, 108, b) 20.0, 74.7, 58.7, c) 0.0179, 0.0141, 0.00864, d) 2910, 10,900, 8530, 5230.