PG 158 (3)

A) $Cr(s) + O_2(g) \rightarrow Cr_2O_3(s)$

$\downarrow Cr \times 2$

$2Cr(s) + O_2(g) \rightarrow Cr_2O_3(s)$

$\downarrow O_2 \times 3 \quad Cr_2O_3 \times 2$

$2Cr(s) + 3O_2(g) \rightarrow 2Cr_2O_3(s)$

$\downarrow (2Cr) \times 2$

$4Cr(s) + 3O_2(g) \rightarrow 2Cr_2O_3(s)$

B) $Cu_2S(s) + O_2(g) \rightarrow Cu(s) + SO_2(g)$

$\downarrow 2 \times Cu$

$Cu_2S(s) + O_2(g) \rightarrow 2Cu(s) + SO_2(g)$

C) $C_6H_5CH_3(l) + O_2(g) \rightarrow H_2O(l) + CO_2(g)$

$\downarrow 7 \times CO_2 \quad 4 \times H_2O$

$C_6H_5CH_3(l) + O_2(g) \rightarrow 4H_2O(l) + 7CO_2(g)$

$\downarrow 9 \times O_2$

$C_6H_5CH_3(l) + 9O_2(g) \rightarrow 4H_2O(l) + 7CO_2(g)$

PG. 158 (11)

OSSIDO FERRO (III) Fe_2O_3

A) $Fe(s) + O_2(g) \rightarrow Fe_2O_3(s)$

$\downarrow$ 4x Fe , 3x O_2 , 2x Fe_2O_3

$4Fe(s) + 3O_2(g) \rightarrow 2Fe_2O_3(s)$

B) 2.68 gr di $Fe(s)$

$$n_{Fe} = \frac{2.68}{55.845} = 0.0480 \text{ moli}$$

CIFRE SIGNIFICATIVE => $\frac{2.68}{55.8} = 0.0480$ moli

MASSA DI Fe_2O_3 :

$$M(Fe_2O_3) = 2 \cdot 55.845 + 3 \cdot 15.999$$

$$= 159.687 \text{ gr/mol}$$

$$\text{MASSA}(Fe_2O_3) = n_{Fe} \cdot \frac{2^1}{4_2} \cdot M(Fe_2O_3)$$

$$= 3.83 \text{ g}$$

C) MASSA di O_2

$$n_{O_2} = n_{Fe} \cdot \frac{3}{4} = 0.0360 \text{ moli}$$

$$\text{Massa}(O_2) = n_{O_2} \cdot (15.999 \cdot 2) = 1.15 \text{ g}$$

(33) PG. 160

$CaCO_3(s) \longrightarrow CaO(s) + CO_2(g)$

1.506 g MISCELA $CaCO_3$ + ALTRO

MASSA $(CO_2) = 0.558$ g

$$n_{CO_2} = \frac{0.558}{12.011 + 2 \cdot 15.9994}$$

$$= \frac{0.558}{44.001} = 0.0127 \text{ moli}$$

$$n_{CaCO_3} = n_{CO_2}$$

MASSA $(CaCO_3) = (12.011 + 3 \cdot 15.9994 + 40.078) \cdot 0.0127$

$$= 100.087 \cdot 0.0127$$

$$= 1.27 \text{ g}$$

$$\% CaCO_3 = 1.27 / 1.506 \cdot 100$$

$$= \underline{84.3}$$

(41) PG. 160

$C_x H_y O_z + O_2 \rightarrow CO_2 + H_2O$

$n_{CO_2} = \frac{m_{CO_2}}{PM(CO_2)} = \frac{0.1356}{12+32} = 0.00308$ moli

$n_{H_2O} = \frac{m_{H_2O}}{PM(H_2O)} = \frac{0.0833}{18} = 0.00463$ moli

$n_H = 2 \cdot n_{H_2O} = 0.00926$ moli

$m_C = n_C \cdot 12 = n_{CO_2} \cdot 12 =$ 0.0370 gr

$m_H = n_H \cdot 1 = 2 \cdot n_{H_2O} \cdot 1 = 0.00926$ gr

$m_O = m_{TOT} - m_C - m_H = 0.04934$ gr

$n_O = m_O / PA(O) = 0.00308$ moli

$\frac{n_C}{n_O} = 1$

$\frac{n_H}{n_O} = 3$

$\Rightarrow$ CH_3O FORMULA MINIMA EMPIRICA

$12+3+16$

$n = \frac{P.\ MOLECOLARE}{P.\ FORMULA\ IMIN} = \frac{62.1}{31} = 2$

$C_2H_6O_2$

$PV = nRT$

561 mmHg = 0.738 atm

125 mL = 0.125 L

23.0° C = 296 °K

$R = 0.082057 \ \frac{L \ atm}{mol \ K}$

$n = \frac{PV}{RT} = \frac{0.09225}{24.29} = 3.80 \cdot 10^{-3}$ mol

$n = \frac{m}{M} \Rightarrow M = \frac{m}{n} = 27.63$ gr/mol

$Fe(s) + 2\,HCl(aq) \rightarrow FeCl_2(aq) + H_2(g)$

2.2 g di Fe $\Rightarrow n_{Fe} = 2.2 / 55.845 = 3.94\ 10^{-2}$ mol

$V = 10.0$ L

$T = 25.°C = 298$ K

$n_{H_2} = n_{Fe} \Rightarrow P = \frac{nRT}{V} = 9.63\ 10^{-2}$ atm