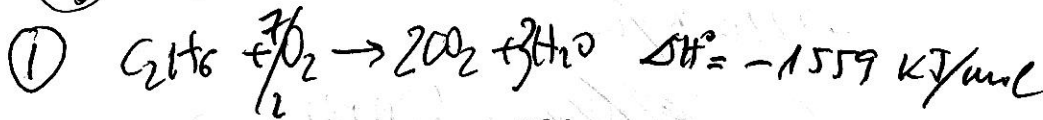
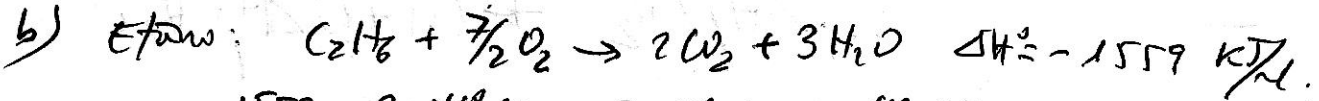


$$8 + 2 + 1$$

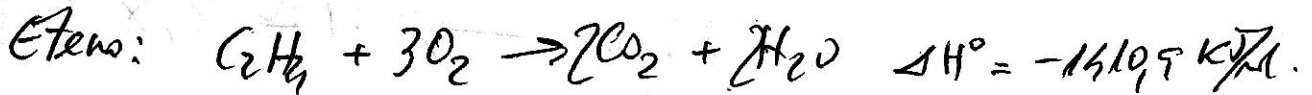


1/a)  $224 \text{ g} \rightarrow n = \frac{224}{32} = 7 \text{ mol de O}_2$   $Q = \frac{7 \cdot 1559}{\frac{7}{2}} = 2 \cdot 1559 = 3118 \text{ kJ}$

~~1 mol de O}\_2~~  $\frac{7}{2} \text{ mol O}_2 = 7 \text{ mol}$   $\rightarrow Q = \frac{10 \cdot 1559}{x} = 3118 \text{ kJ}$



2/  $-1559 = 2 \cdot \Delta H_f^\circ \text{CO}_2 + 3 \cdot \Delta H_f^\circ \text{H}_2\text{O} - \Delta H_f^\circ \text{C}_2\text{H}_6$   
 $-1559 = 2 \cdot (-393,5) + 3 \cdot (-285,8) - \Delta H_f^\circ \text{C}_2\text{H}_6$   
 $-1559 = -787 - 857,4 - \Delta H_f^\circ \text{C}_2\text{H}_6$   
 $\Delta H_f^\circ \text{C}_2\text{H}_6 = 1559 - 787 - 857,4 = -85,4 \text{ kJ/mol}$



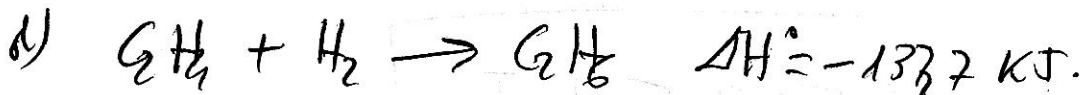
$$-1410,9 = 2 \cdot \Delta H_f^\circ \text{CO}_2 + 2 \cdot \Delta H_f^\circ \text{H}_2\text{O} - \Delta H_f^\circ \text{C}_2\text{H}_2$$

$$-1410,9 = 2 \cdot (-393,5) + 2 \cdot (-285,8) - \Delta H_f^\circ \text{C}_2\text{H}_2$$

$$-1410,9 = -787 - 571,6 - \Delta H_f^\circ \text{C}_2\text{H}_2$$

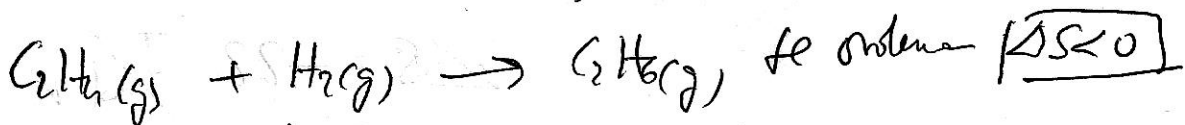
$$\Delta H_f^\circ \text{C}_2\text{H}_2 = 1410,9 - 787 - 571,6 = 52,3 \text{ kJ/mol}$$

1/c)  $\Delta H^\circ = \Delta H_f^\circ \text{C}_2\text{H}_6 - \Delta H_f^\circ \text{C}_2\text{H}_2 = -85,4 - 52,3 = -137,7 \text{ kJ/mol}$



1/  $\frac{1 \text{ mol H}_2}{\text{despide } 137,7 \text{ kJ}} = \frac{x}{137,7} \rightarrow x = 10 \text{ mol H}_2$

$$P \cdot V = nRT \rightarrow V = \frac{nRT}{P} = \frac{10 \cdot 0,082 \cdot 298}{1} = 243,86 \text{ L}$$



1/f)  $\Delta S^\circ = -110,6 \text{ J/mol} \cdot \text{K}$   $\Delta H^\circ = -137,7 \text{ kJ/mol}$

$$\Delta G^\circ = \Delta H^\circ - T \cdot \Delta S^\circ = -137,7 - 298 \cdot (-110,6 \cdot 10^{-3}) = -137,7 + 30,19 = -107,5 \text{ kJ/mol}$$

1/g)  $0 = -137,7 - T \cdot (-110,6 \cdot 10^{-3})$

$$137,7 = T \cdot 110,6 \cdot 10^{-3} \quad T = \frac{137,7}{110,6 \cdot 10^{-3}} = 1245 \text{ K}$$