

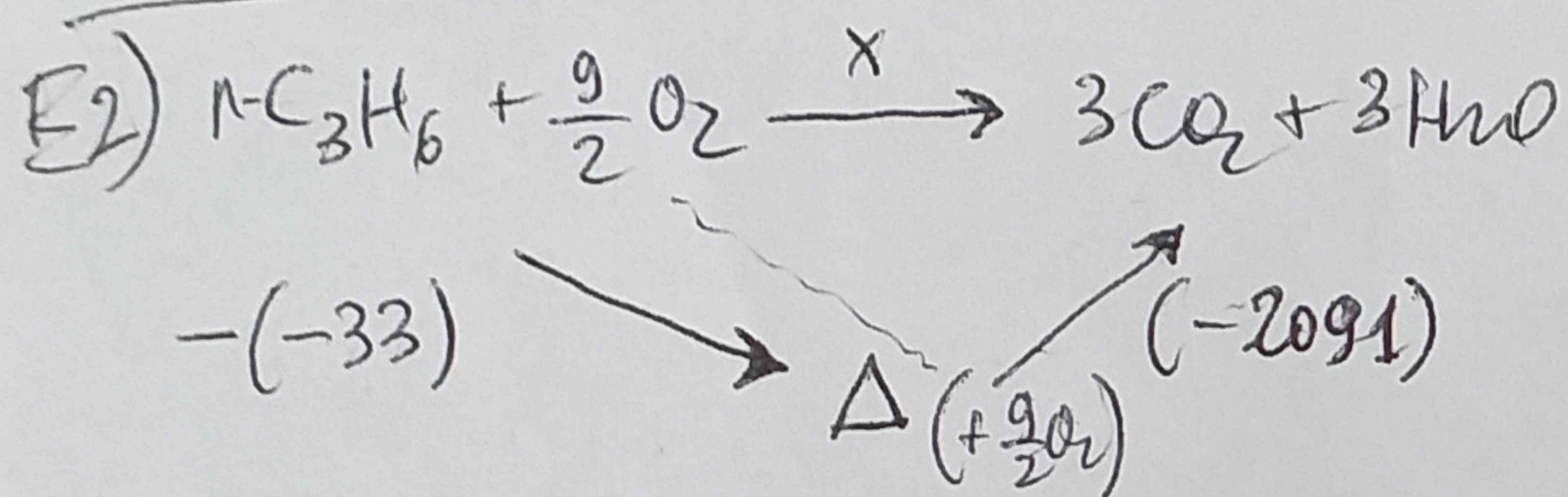
# Soluzioni degli esercizi della Prova Scritta di Chimica del 6 Febbraio 2023 (CBAER)

E1)  $n_{C_xH_yO_z} = \frac{6,12g}{122,38g/mol} = 0,050 \text{ mol}$ ;  $n_C = n_{CO_2} = \frac{15,4g}{44,01g/mol} = 0,350 \text{ mol}$

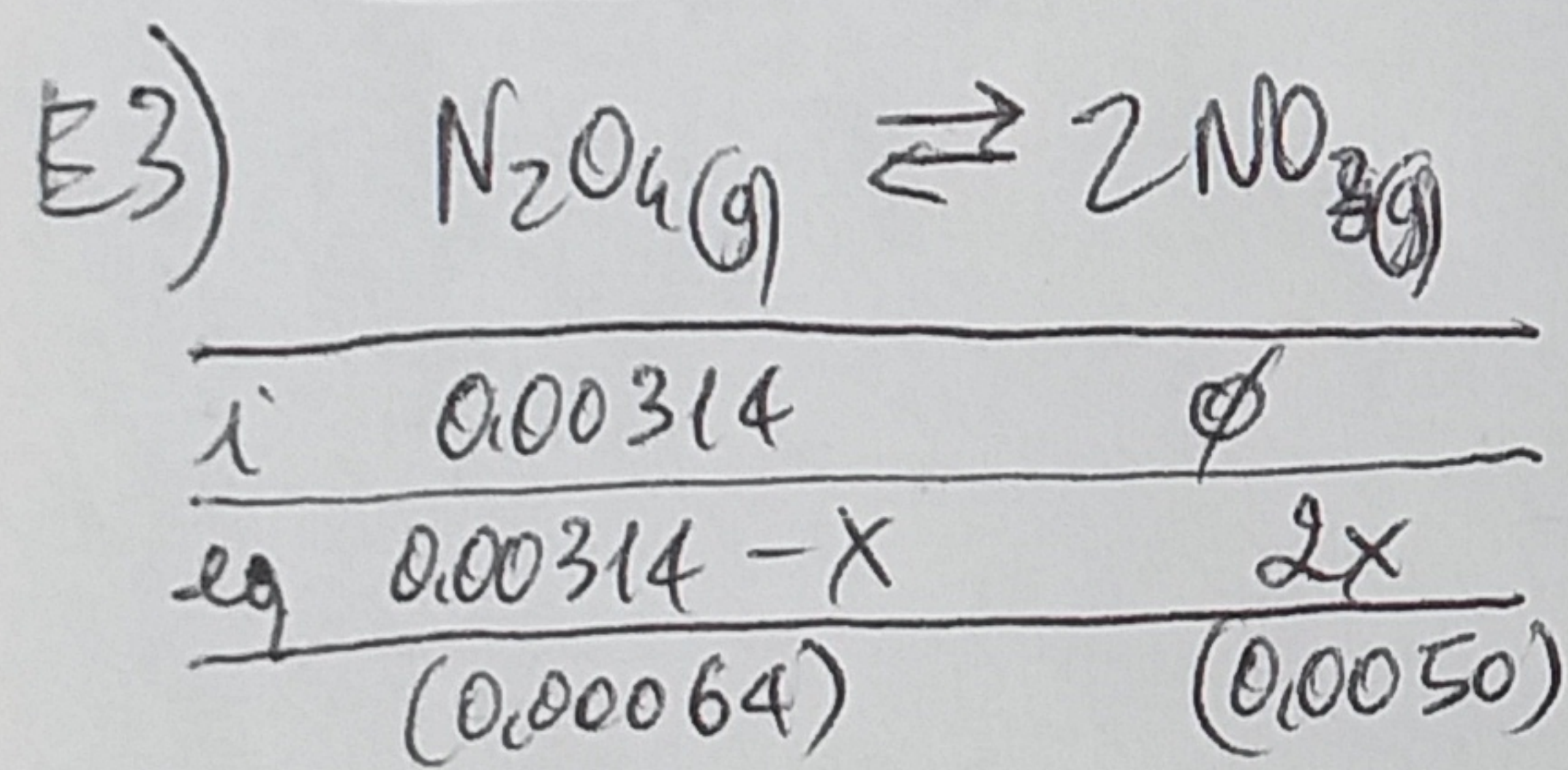
$n_H = 2n_{H_2O} = 2 \cdot \frac{2,7g}{18,02g/mol} = 0,300 \text{ mol}$ ;

$x = \frac{0,350}{0,050} = 7$ ;  $y = \frac{0,300}{0,050} = 6 \rightarrow m_C = 7 \times 12,01 = 84,08g$ ;  $m_H = 6 \times 1,01 = 6,05g$

$m_O = M - m_C - m_H = 122,38 - 84,08 - 6,05 = 32,25g$ ;  $z = \frac{32,25g}{16,00g/mol} = 2 \rightarrow C_7H_6O_2$   
f. molecol.  
f. minima



$x = \Delta H_c^\circ(C_3H_6) = (33 - 2091) \text{ kJ/mol} = -2058 \text{ kJ/mol}$



$\Delta n = 1$

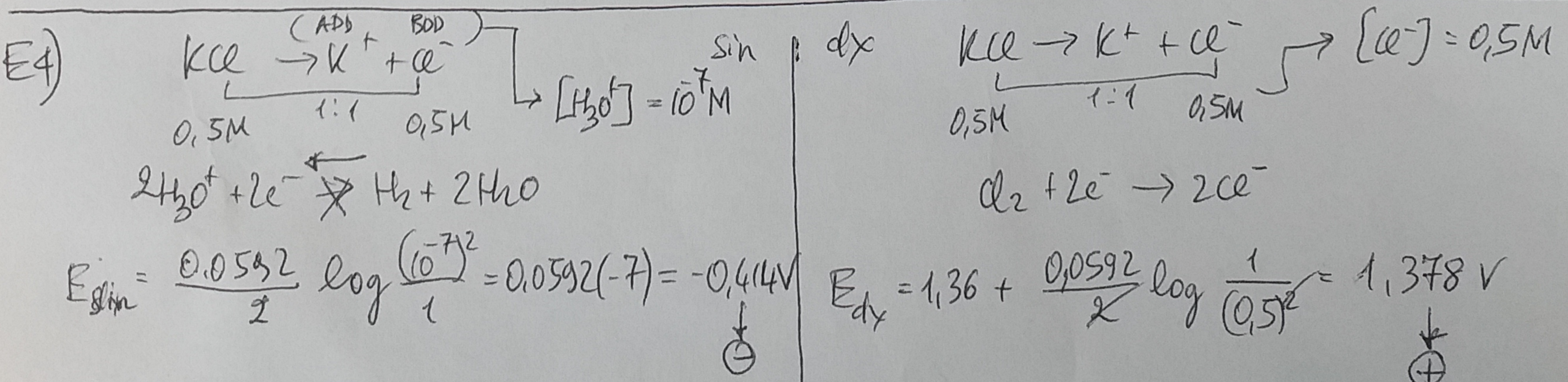
$n_{N_2O_4} = \frac{0,2889g}{92,01g/mol} = 3,14 \cdot 10^{-3} \text{ mol}$

$n_{tot} = 0,00314 + x$ ;  $n_{NO_2} = 2x = 0,0050 \text{ mol} \rightarrow$

$x = \frac{0,0050}{2} = 0,0025 \text{ mol}$ ;  $n_{N_2O_4} = (0,00314 - 0,0025) \text{ mol} = 0,00064 \text{ mol}$

$n_{tot} = (0,00314 + 0,0025) \text{ mol} = 0,00564 \text{ mol}$ ;  $x_{N_2O_4} = \frac{0,00064 \text{ mol}}{0,00564 \text{ mol}} = 0,113$ ;  $x_{NO_2} = \frac{0,0050 \text{ mol}}{0,00564 \text{ mol}} = 0,887$

$K_p = \frac{x_{NO_2}^2}{x_{N_2O_4}} \cdot P_{tot} = \frac{(0,887)^2 \cdot (161/760)}{0,113} = 1,47$



$\Delta E = E_{\oplus} - E_{\ominus} = [1,378 - (-0,414)]V = 1,792V \approx 1,79V$