

# Soluzione della Prova Scritta del 10 giugno 2014

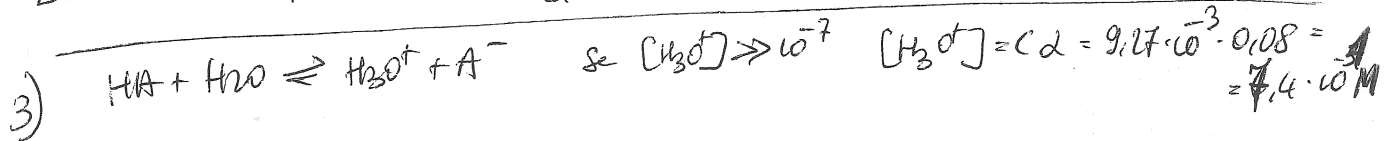
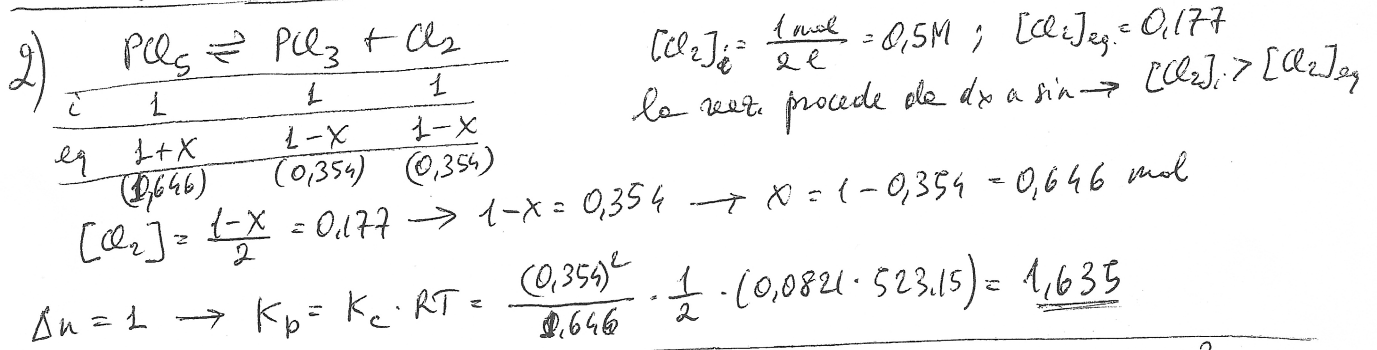
1) Per un acido debole:  $\pi = \kappa RT(1+d) \rightarrow M = \frac{\kappa RT(1+d)}{\pi \cdot V} = \frac{1,72 \cdot 0,0821 \cdot 298,15 \cdot 1,08}{0,264 \cdot 1} = 122,17 \text{ g/mol}$

$$m_c = \frac{68,84}{100} \cdot 122,17 = 84,10 \text{ g} \rightarrow n_c = \frac{84,10}{12} = 7$$

$$m_H = \frac{4,96}{100} \cdot 122,17 = 6,06 \text{ g} \rightarrow n_H = \frac{6,06}{1,01} = 6$$

$$m_o = \frac{26,20}{100} \cdot 122,17 = 32,01 \text{ g} \rightarrow n_o = \frac{32,01}{16} = 2$$

}  $C_7H_6O_2$   
Formula MINIMA e MOLECOLARE



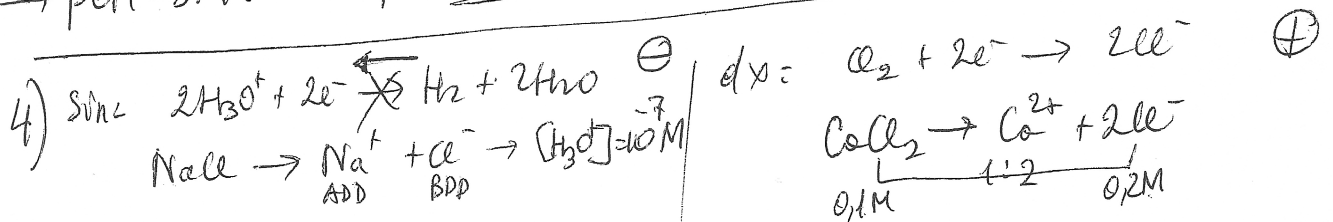
$\rightarrow pH = -\log(0,00074) = 3,13$

$K_a = \frac{[H_3O^+]^2}{c - [H_3O^+]} = \frac{10^{-6,26}}{9,27 \cdot 10^{-3} - 10^{-3,13}} = 6,45 \cdot 10^{-5}$   $NaA \rightarrow Na^+ + A^-$   
 $A^- + H_2O \rightleftharpoons HA + OH^- \rightarrow$

$\rightarrow [OH^-] = \frac{K_w}{[H_3O^+]} + \frac{cK_b}{[OH^-] + K_b}$  con  $K_b = \frac{K_w}{K_a} = 1,55 \cdot 10^{-10} \ll 10^{-7} \rightarrow$

$\rightarrow [OH^-]^2 - K_w - cK_b = 0 \rightarrow [OH^-] = \sqrt{K_w + cK_b} \approx \sqrt{cK_b} = 3,94 \cdot 10^{-6} \text{ M} \rightarrow$

$\rightarrow pOH = 5,41 \rightarrow pH = 8,59$



$E = 0 + \frac{0,0592}{2} \log \frac{(10^{-7})^2}{1} = -0,414 \text{ V}$   $E = 1,36 + \frac{0,0592}{2} \log \frac{1}{(0,2)^2} = 1,401 \text{ V}$

$\Delta E = E_{\oplus} - E_{\ominus} = 1,401 - (-0,414) = 1,816 \text{ V}$