

TP9 Chapitre 10: Estimation du K_A du couple
 $\text{CH}_3\text{COOH}/\text{CH}_3\text{COO}^-$

Question 1

$$m_A = C_A \times V_A$$

mol mol/L L

!

Question 2

FORMULE TABLEUR

$$= \$C\$4 * D8 * 0,001$$

~~~~~  
valeur  
concentrations

~~~~~  
vol en
mL

~~~~~  
↳ conversion  
en litre

### Question 3

| Avancement             | $AH + H_2O \rightleftharpoons A^- + H_3O^+$ |       |          |          |
|------------------------|---------------------------------------------|-------|----------|----------|
| $x = 0$                | $m_A$                                       | solv. | 0        | 0        |
| $x$                    | $m_A - x$                                   | solv. | $x$      | $x$      |
| $x_{eq}$               | $m_A - x_{eq}$                              | solv. | $x_{eq}$ | $x_{eq}$ |
| $x = m_A$<br>$x_{max}$ | 0                                           | solv. | $m_A$    | $m_A$    |

Formule Tableur

= D10

on recopie  
la ligne 3

# Question 4

$$\begin{array}{l} V_{\text{total}} \\ \downarrow \\ \text{L} \end{array} = \begin{array}{l} V_{\text{Becken}} \\ \downarrow \\ \text{mL} \\ = \times 0,001 \text{ L} \end{array} + \begin{array}{l} V_{\text{apote}} \\ \downarrow \\ \text{mL} \\ = \times 0,001 \text{ L} \end{array}$$

$$= (\underbrace{\text{\$6\$4}}_{\text{vol eau en mL}} + \underbrace{\text{D8}}_{\text{vol acid}}) \times 0,001$$

↓  
combustion

## QUESTION 5

$$\text{pH} = -\log([\text{H}_3\text{O}^+])$$

Si l'avancement est maximal, alors  $x = n_A$

$$\text{et } [\text{H}_3\text{O}^+] = \frac{x}{V_{\text{total}}} = \frac{n_A}{V_{\text{total}}}$$

$$\text{et } \boxed{\text{pH} = -\log\left(\frac{n_A}{V_{\text{total}}}\right)}$$

FORMULE TABLEUR

$$= -\text{LOG10}(\text{D11} / \text{D12})$$

$\log(x)$   $x_{\text{max}} = n_A$   $V_{\text{total}}$

## Question 6

$$\text{pH}_{\text{mes}} = -\log([H_3O^+]_{\text{mes}})$$

$$[H_3O^+]_{\text{mesuré}} = 10^{-\text{pH}_{\text{mes}}}$$

FORMULE TABLEUR

$$= 10^{(-\text{pH})}$$

## QUESTION 7

$$x_{eq} = [H_3O^+]_{mes} \times V_{total}$$

FORMULE TABLEUR

$$= D14 * D12$$

$\downarrow$   $\downarrow$   
 $[H_3O^+]_{mes}$   $V_{total}$

# Question 8

TABLEAU

$$[A^-] = \frac{x_{eq}}{V_{total}} = [H_3O^+]_{mes.}$$

$$= D14$$

$$[HA] = \frac{MA - x_{eq}}{V_{total}} =$$

$$= (D10 - D15) / D12$$

### QUESTION 9

$$K_A = \frac{[A^-][H_3O^+]}{[HA]}$$

$$= 10^{-16} \times 10^{-14} / 10^{-17}$$

## QUESTION 10

$$pK_A = -\log(K_A)$$

$$= -\log_{10}(1.8)$$