

addition électrophyle

- a) pages 2 et 3
- b) page 42
- c) page 41 et 42

2) l'oxydation des alcools

a) page 55  $m = v \cdot \rho \Rightarrow$

b)  $50 \text{ cm}^3 \text{ CH}_3\text{CHO} \Leftrightarrow 50 \text{ cm}^3 \times 0,78 \text{ g/cm}^3 = 39 \text{ g}$  (1)

$n = \frac{m}{M} = \Leftrightarrow \frac{39 \text{ g}}{44 \text{ g/mol}} = 0,886 \text{ mol CH}_3\text{CHO}$  (1)

$\Leftrightarrow 0,886 \text{ mol CH}_3\text{CH}_2\text{OH}$  à 100% de rendement

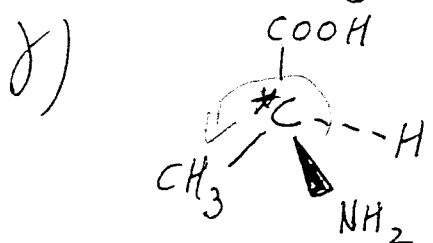
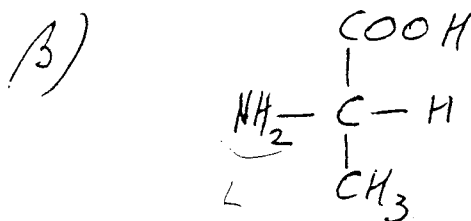
à 62% :  $\frac{0,886 \times 100}{62} = 1,43 \text{ mol CH}_3\text{CH}_2\text{OH}$  (1)

$m = n \cdot M = \Leftrightarrow 1,43 \text{ mol} \times 46 \text{ g/mol} = 65,76 \text{ g éthanol}$  (1)

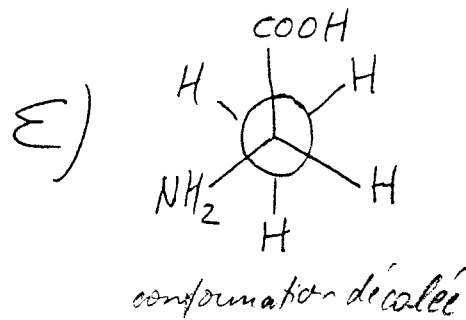
- c) a) DNPH
- b) réactif de Schiff

3) les acides aminés

- a) glycine : non chiral : pas de C asymétrique
- alanine : chiral : 1 C asymétrique



d) 5  
Priorité :  $\text{NH}_2 > \text{COOH} > \text{CH}_3 > \text{H}$



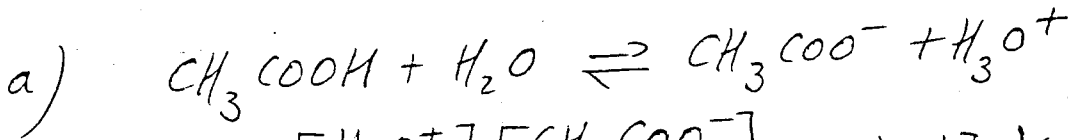
f) excès de HCl:  $0,015 \cdot 0,5 - 0,010 \cdot 0,625 = 1,25 \cdot 10^{-3} \text{ mol}$

$$[\text{H}_3\text{O}^+] = \frac{1,25 \cdot 10^{-3}}{0,010 + 0,015} = 5 \cdot 10^{-2} \text{ mol/l} = \frac{n_{\text{HCl excès}}}{(V_{\text{amine}} + V_{\text{HCl}})}$$

$$\text{pH} = -\log 5 \cdot 10^{-2} = 1,30$$

1

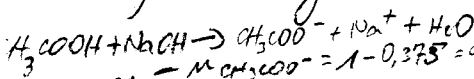
## 5) les tampons



$$K_a = \frac{[\text{H}_3\text{O}^+][\text{CH}_3\text{COO}^-]}{[\text{CH}_3\text{COOH}]} \Rightarrow [\text{H}_3\text{O}^+] = K_a \frac{[\text{CH}_3\text{COOH}]}{[\text{CH}_3\text{COO}^-]}$$

$$\text{pH} = \text{p}K_a + \log \frac{[\text{CH}_3\text{COO}^-]}{[\text{CH}_3\text{COOH}]} \approx \text{p}K_a + \log \frac{c_0 \text{CH}_3\text{COO}^-}{c_0 \text{CH}_3\text{COOH}}$$

b)  $15 \text{ g NaOH} \Leftrightarrow \frac{15 \text{ g}}{40 \text{ g/mol}} = 0,375 \text{ mol}$



$\text{H}_3\text{COOH} = M_{\text{initiale}} - M_{\text{CH}_3\text{COO}^-} = 1 - 0,375 = 0,625 \text{ mol}$

$$\text{pH} = 4,75 + \log \frac{0,375}{0,625} = 4,53$$

c)  $[\text{H}_3\text{O}^+] = 10^{-\text{pH}} = 10^{-4,53} = 2,95 \cdot 10^{-5} \text{ mol/l}$

$$\frac{[\text{HInd}]}{[\text{Ind}^-]} = \frac{[\text{H}_3\text{O}^+]}{K_a}$$

$K_a (\text{indicateur}) = 10^{-\text{p}K_a} = 10^{-4,70} = 2 \cdot 10^{-5}$

$$\frac{[\text{HInd}]}{[\text{Ind}^-]} = \frac{2,95 \cdot 10^{-5}}{2 \cdot 10^{-5}} = 1,48$$