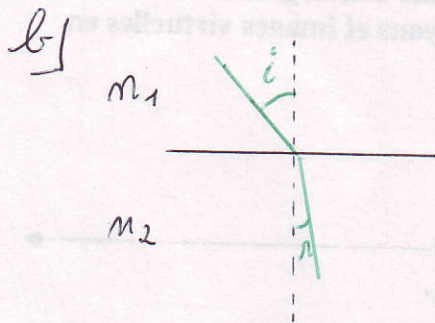


I Réfraction (2 points)

a) c'est la réfraction



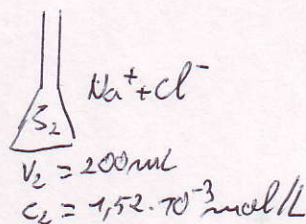
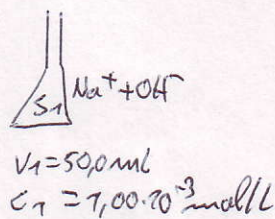
$$n_1 \sin i = n_2 \sin r$$

$$\Rightarrow r = \sin^{-1} \left(\frac{n_1 \sin i}{n_2} \right) = \sin^{-1} \left(\frac{\sin 10^\circ}{1,3} \right)$$

$$\Rightarrow r = 7,6^\circ$$

II Conductivité (6 pt)

a)



$$[\text{Na}^+] = \frac{C_1 V_1 + C_2 V_2}{V_1 + V_2} = \frac{1,00 \cdot 10^{-3} \times 500 + 1,52 \cdot 10^{-3} \times 200}{250}$$

$$[\text{Na}^+] = 1,42 \cdot 10^{-3} \text{ mol/L} \quad (1 \text{ pt})$$

$$[\text{OH}^-] = \frac{C_1 V_1}{V_1 + V_2} = \frac{1,00 \cdot 10^{-3} \times 500}{250} = 0,200 \cdot 10^{-3} \text{ mol/L} \quad (1 \text{ pt})$$

$$[\text{Cl}^-] = \frac{C_2 V_2}{V_1 + V_2} = \frac{1,52 \cdot 10^{-3} \times 200}{250} = 1,22 \cdot 10^{-3} \text{ mol/L} \quad (1 \text{ pt})$$

b) $[\text{Na}^+] = 1,42 \text{ mol/m}^3 \quad | \quad [\text{OH}^-] = 0,200 \text{ mol/m}^3 \quad | \quad [\text{Cl}^-] = 1,22 \text{ mol/m}^3$

c) $\sigma = \lambda_{\text{Cl}^-} [\text{Cl}^-] + \lambda_{\text{Na}^+} [\text{Na}^+] + \lambda_{\text{OH}^-} [\text{OH}^-]$

$$= 7,63 \cdot 10^{-3} \times 1,22 + 5,01 \cdot 10^{-3} \times 1,42 + 19,89 \cdot 10^{-3} \times 0,200$$

$$\sigma = 20,4 \cdot 10^{-3} \text{ S/m} \quad (1 \text{ pt})$$

III Observation d'un limbe (12 pt)

a) $c = \frac{1}{f'} = \frac{1}{8 \cdot 10^{-2}} = 12,5 \text{ D} \quad (1 \text{ pt})$

$$\frac{1}{0,047555}$$

b) $\frac{1}{\overline{OA}'} = \frac{1}{\overline{OA}} + \frac{1}{\overline{OF}'}$ avec $\overline{OA} = -6 \text{ cm}$ et $\overline{OF}' = 8 \text{ cm}$

$$\Rightarrow \overline{OA}' = -24 \text{ cm} \quad (1 \text{ pt})$$

c) $\gamma = \frac{\overline{A'B'}}{\overline{AB}} = \frac{\overline{OA}'}{\overline{OA}} = \frac{-24 \text{ cm}}{-6} = 4 \quad (\text{sans unité}) \quad (1 \text{ pt})$

d) $\overline{A'B'} = 4 \times \overline{AB} = 4 \times 3 \text{ cm} = 12 \text{ cm}$

