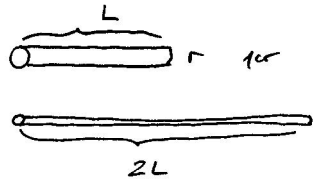
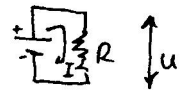
QCM

10.77. 

$R_1 = 0{,}1\ \Omega = \rho \frac{L}{\pi r^2}$

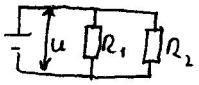
$R_2 = \rho \frac{2L}{\pi (r/2)^2} = 8\rho \frac{L}{\pi r^2} = 8R_1 = 0{,}8\ \Omega$ ⇒ (e)

10.78. 

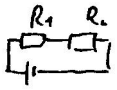
$P = RI^2 = UI = \frac{U^2}{R}$ (relations équivalentes)

P = constante : A + B + C ⇒ (a)

10.79. série : $R_s = 2R$ parallèle : $R_p = R/2$ ⇒ $\frac{R_s}{R_p} = \frac{2R}{R/2} = 4$ (b)

10.80. 

$U = R_1 I_1 = R_2 I_2$ ⇒ $\frac{I_1}{I_2} = \frac{R_2}{R_1}$ (e)

10.81. 

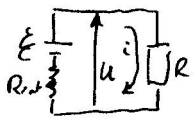
$U_1 = IR_1$ ⇒ $I = \frac{U_1}{R_1} = \frac{U_2}{R_2}$ ⇒ $\frac{U_1}{U_2} = \frac{R_1}{R_2}$ (a)

$U_2 = IR_2$

10.82. A : $\frac{1}{R} + \frac{1}{R} + \frac{1}{2R} = \frac{5}{2R}$ ⇒ $R_{éq} = \frac{2R}{5}$ 1).

B : $\frac{1}{2R} + \frac{1}{2R} = \frac{2}{2R} = \frac{1}{R}$ ⇒ $R_{éq} = R$ 1). ⇒

C : $\frac{1}{R} + \frac{1}{3R} = \frac{4}{3R}$ ⇒ $R_{éq} = \frac{3R}{4}$ 2). B ; C ; A (d)

10.83. 

$\mathcal{E} - Ri - R_{int} \cdot i = 0$ ⇒ $i = \frac{\mathcal{E}}{R + R_{int}}$

$\mathcal{E} - R_{int} \cdot i = \frac{1}{2}\mathcal{E}$

⇒ $\mathcal{E} - R\frac{\mathcal{E}}{R + R_{int}} = \frac{1}{2}\mathcal{E}$; $1 - \frac{R}{R + R_{int}} = \frac{1}{2}$; $\frac{1}{2} = \frac{R}{R + R_{int}}$; $2R = R + R_{int}$

⇒ $R = R_{int}$ (d)

10.84. a). V b). F (b)

10.85. a). F b). V (b)

10.86.

$$\begin{cases} 2 = R(I_1 + I_2 + I_4) \\ 5 - RI_3 - 7 - RI_2 = 0 \\ 2 - RI_4 - 3 - 5 = 0 \end{cases} ; \begin{cases} 2 = R(I_1 + I_2 + 6/R) \\ -2 = 2RI_2 + RI_1 \\ I_4 = 6/R \end{cases} ; \begin{cases} -4 = RI_1 + RI_2 \ (1) \\ -2 = RI_1 + 2RI_2 \ (2) \end{cases} ; \quad 2 = RI_2$$

⇒ $I_2 = \frac{2}{R} = 1\,A$ (d)

10.87. $\Delta U = R_2 \cdot I_2 = 2V$ (c)

10.88. (b).