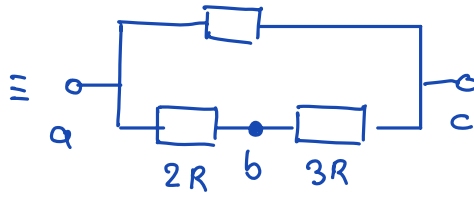
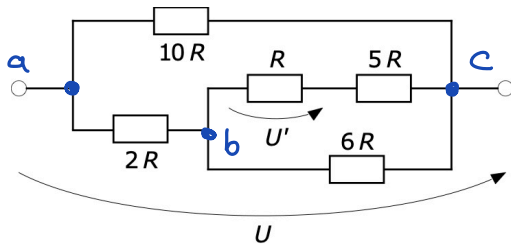


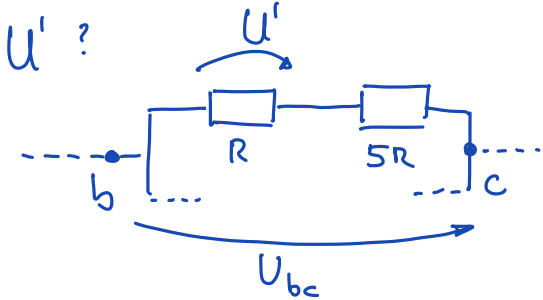
Question 1 - QCM - Corrigé

• Question 1 - I



$U_{bc} ?$

$$\frac{U}{5R} = \frac{U_{bc}}{3R} \rightarrow U_{bc} = \frac{3}{5}U$$



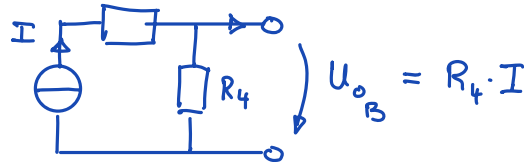
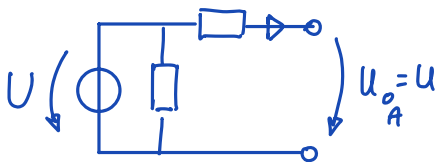
$$\frac{\frac{3}{5}U}{6R} = \frac{U'}{R} \rightarrow U' = \frac{3}{10}U = \frac{U}{10}$$

$\Rightarrow (a)$

• Question 1 - II

(A)

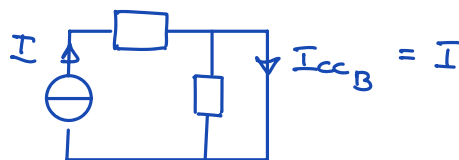
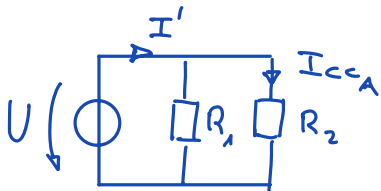
- À vide :



$$U_{oA} = U_{oB}$$

$$\rightarrow \underline{U = R_4 \cdot I}$$

- En court-circuit :



$$I_{ccA} = I_{ccB}$$

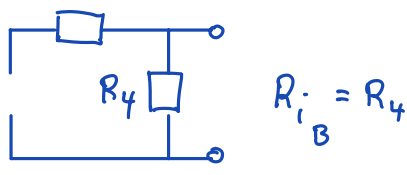
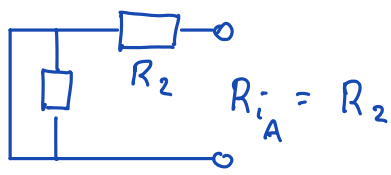
$$\rightarrow \frac{U}{R_2} = I$$

$$\text{ou : } \underline{U = R_2 \cdot I}$$

$$I' = \frac{U}{R_1 + R_2} = U \cdot \frac{R_1 + R_2}{R_1 \cdot R_2}$$

$$I_{ccA} = I' \cdot \frac{R_1}{R_1 + R_2} = U \cdot \frac{R_1 + R_2}{R_1 \cdot R_2} \cdot \frac{R_1}{R_1 + R_2} = \frac{U}{R_2}$$

- Résistance interne (annulation des sources) :

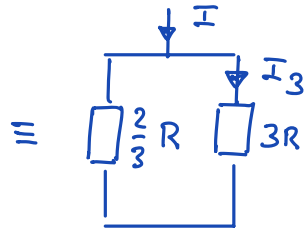
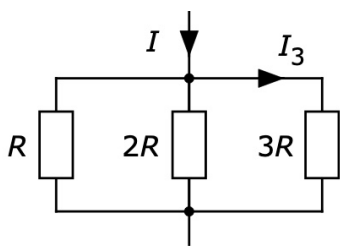


$$R_{iA} = R_{iB} \rightarrow \underline{R_2 = R_4}$$

Pour que $(A) \equiv (B)$, il faut que deux parmi les trois égalités soient vérifiées :

$\Rightarrow (b)$

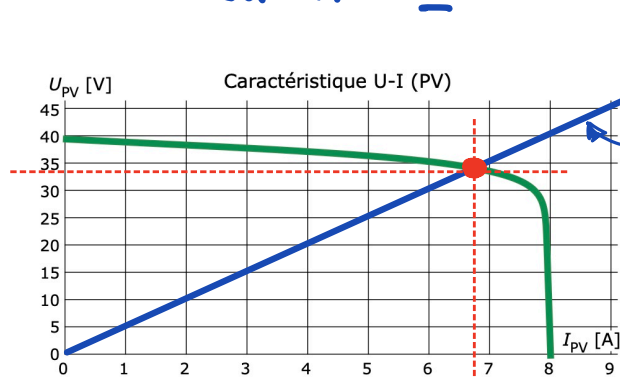
• Question 1 - III



$$I_3 = I \frac{\frac{2R}{3}}{\frac{2R}{3} + 3R} = I \frac{2R}{3 \frac{2+9}{3} R} = \frac{2}{11} I$$

$\Rightarrow (a)$

• Question 1 - IV



pente = $R_e = 5\Omega$

Intersection entre la caractéristique U-I de la source et la droite de charge.

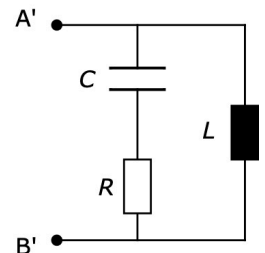
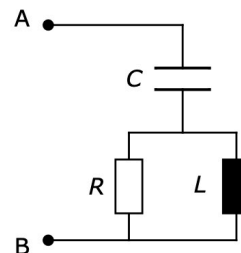
$$\underline{I_1 = 6,8 A ; U_1 = 34 V}$$

$\Rightarrow (c)$

• Question 1 - V

$$\underline{Z}_R = R ; \underline{Z}_L = 2j ; \underline{Z}_C = -2j$$

$$\left. \begin{aligned} \underline{Z}_{AB} &= \underline{Z}_C + \underline{Z}_R \parallel \underline{Z}_L = 1 - j \\ \underline{Z}_{A'B'} &= (\underline{Z}_C + \underline{Z}_R) \parallel \underline{Z}_L = 2 + 2j \end{aligned} \right\}$$



$$\underline{Z}_{AB} = 1.41 \Omega < \underline{Z}_{A'B'} = 2.82 \Omega$$

$\Rightarrow (a)$

• Question 1 - VI

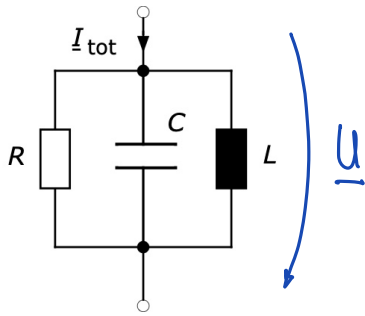
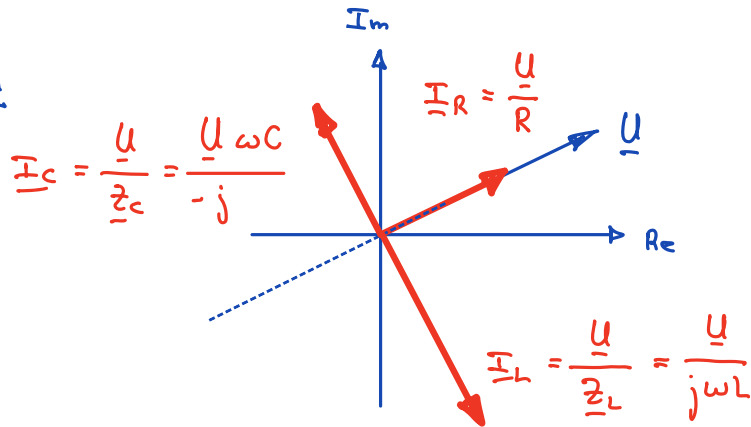


Diagramme de Fresnel:



$$I_R = \frac{U}{R}$$

$$I_L = \frac{U}{\omega L}$$

$$I_C = U\omega C$$

À la résonance, $I_L = I_C$:

$\Rightarrow$ (b)