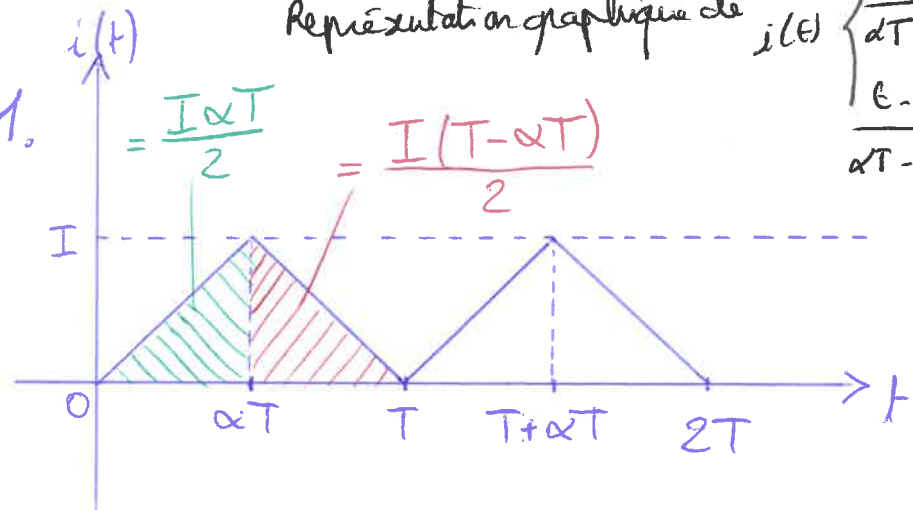


MASSIRI Adam
LABAUDE Rémy
ROY Jules

TD 6

AD 1.



$$i(t) \begin{cases} \frac{tI}{\alpha T} & 0 \leq t < \alpha T \\ \frac{t-T}{\alpha T - T} I & \alpha T \leq t < T \end{cases}$$

$$i(t): \langle i(t) \rangle = \frac{1}{T} \int_0^T i(t) dt = \frac{1}{T} \left(\int_0^{\alpha T} i(t) dt + \int_{\alpha T}^T i(t) dt \right)$$

$$= \frac{1}{T} \left(\frac{I\alpha T}{2} + \frac{I(T-\alpha T)}{2} \right) = \frac{I}{2}$$

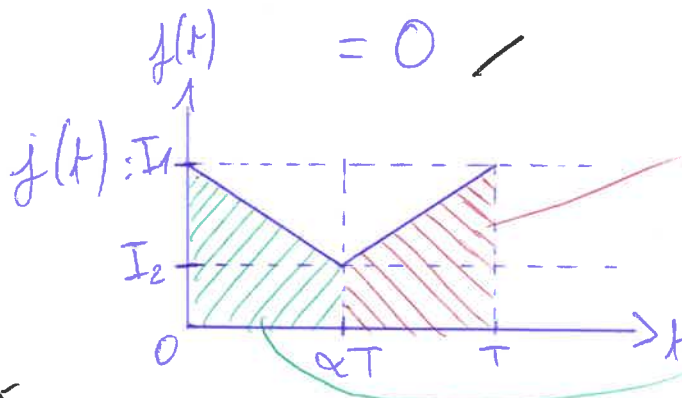
faire aussi avec aires sous la courbe

$$v(t): \langle v(t) \rangle = \frac{1}{T} \int_0^T v(t) dt = \frac{1}{T} \left(\int_0^{\alpha T} v(t) dt + \int_{\alpha T}^T v(t) dt \right)$$

$$= \frac{1}{T} \left((1-\alpha)E \cdot \alpha T + (-\alpha E(T-\alpha T)) \right)$$

$$= (\alpha T - \alpha^2 T)E + (-\alpha T + \alpha^2 T)E$$

$$= 0 \quad \checkmark$$



$$\int_{\alpha T}^T f(t) dt = (T-\alpha T) \left(I_2 + \frac{I_1-I_2}{2} \right)$$

$$\int_0^{\alpha T} f(t) dt = \alpha T \left(I_2 + \frac{I_1-I_2}{2} \right)$$

$$\langle f(t) \rangle = \frac{1}{T} \int_0^T f(t) dt = \frac{1}{T} \left(\int_0^{\alpha T} f(t) dt + \int_{\alpha T}^T f(t) dt \right)$$

$$= \frac{I_1 + I_2}{2} = \frac{1}{T} \left(\alpha T \left(I_2 + \frac{I_1-I_2}{2} \right) + (T-\alpha T) \left(I_2 + \frac{I_1-I_2}{2} \right) \right)$$

$$= \frac{1}{T} \left(T I_2 + T \frac{I_1-I_2}{2} \right) = I_2 + \frac{I_1-I_2}{2}$$

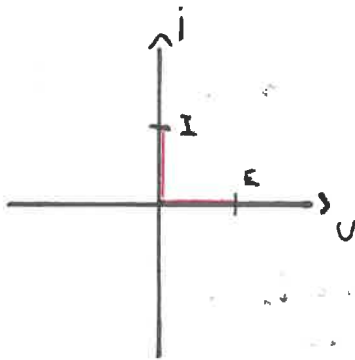
maladeur à évaluer
→ utiliser la représentation géométrique

à parcourir

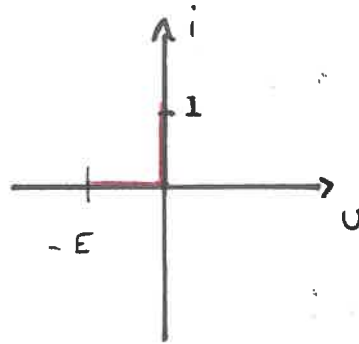
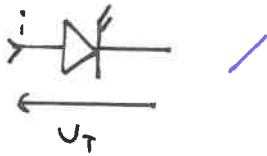
TD6 AD3

Gp2:

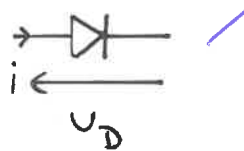
a)



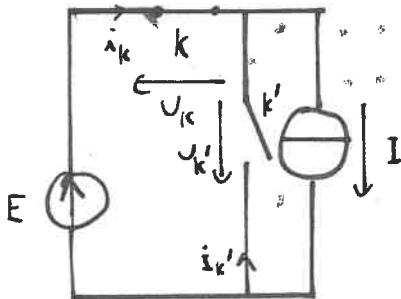
fct T



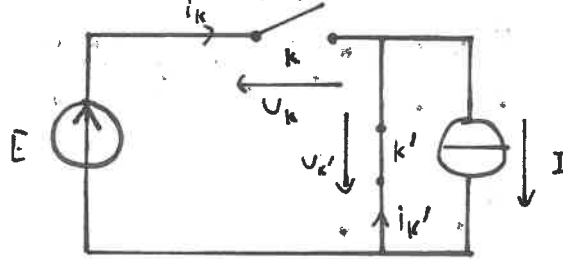
fct D



b) $t \in [0, \alpha T]$



$t \in [\alpha T, T]$

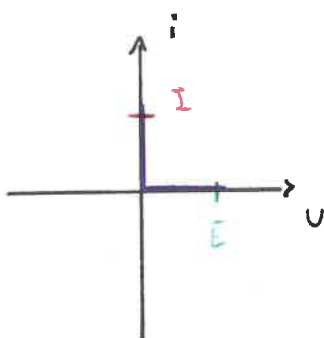


	U_K	i_K	$U_{K'}$	$i_{K'}$
$t \in [0, \alpha T]$	0	I_0	$-E$	0
$t \in [\alpha T, T]$	E	0	0	I_0

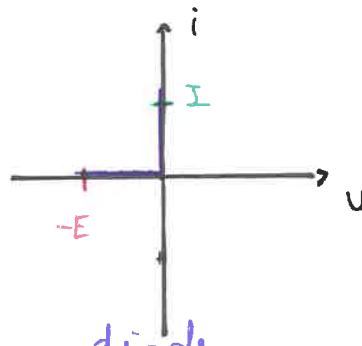
$I > 0$

$K = \text{transistor}$
~~diode~~

$K' = \text{diode}$
~~transistor~~



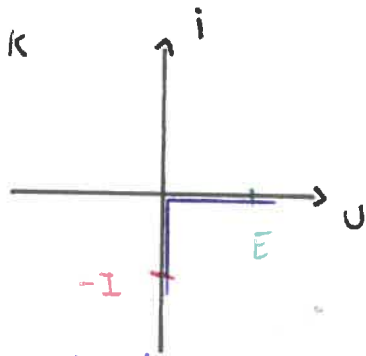
~~transistor~~ diode branché en direct



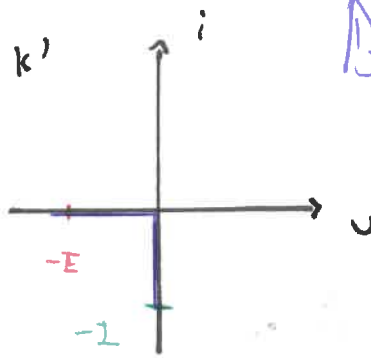
~~diode~~ transistor branché en direct

soyez attentif !

c) $I < 0$



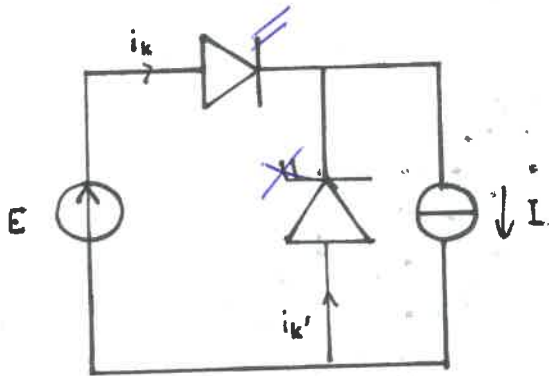
diode
~~transistor~~ branché
en inverse



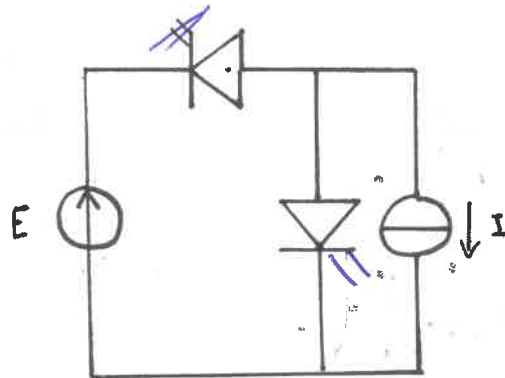
diode branché en
~~Transistor~~ inverse

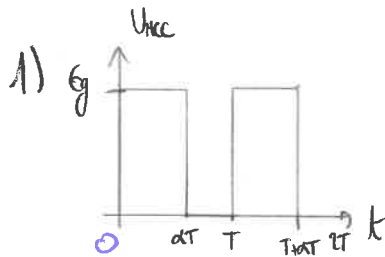
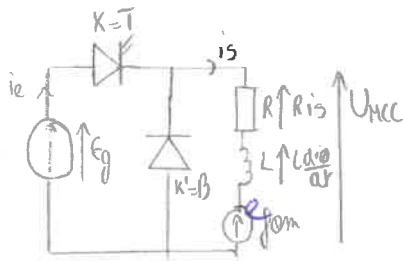
! Confusion!

d) $I > 0$



$I < 0$





$$\begin{aligned} \langle u_{MCC} \rangle &= \frac{1}{T} \int_0^T u_{MCC} dt = \frac{1}{T} \left(\int_0^{\alpha T} u_{MCC} dt + \int_{\alpha T}^T u_{MCC} dt \right) \\ &= \frac{1}{T} (\alpha T E_g + 0) = \alpha E_g = 0,6 \times 150 \text{ V} = 90 \text{ V} \end{aligned}$$

2) Voir le schéma de principe en annexe

3) D'après la loi des mailles : $u(N) = L \frac{di_S}{dt} + R i_S + e_{\text{form}}$
 On i_S est constante $\langle u_{MCC} \rangle = R \langle i_S \rangle + e_{\text{form}}$ car $\langle L \frac{di_S}{dt} \rangle = 0$.
 pas forcément $\langle u_{MCC} \rangle = R \langle i_S \rangle + E$ car R et E sont constants

4) Comme $\langle u_{MCC} \rangle = R \langle i_S \rangle + E \Rightarrow \langle i_S \rangle = \frac{\langle u_{MCC} \rangle - E}{R} = \frac{90 - 80}{1,5} \approx 6,6 \text{ A}$

B