Correction contrôle n°1 CPI2 : Groupe1

Exercice n°1

$$R_{AB} = \frac{8R}{13}$$

Exercice n°2

$$U = \frac{E}{8}$$

Exercice n°3

$\underline{Y}_{AB} = \frac{G_0}{2} + j\left(C\omega - \frac{1}{L\omega}\right)$		$Y_{AB} = \sqrt{\left(\frac{G_0}{3}\right)^2 + \left(C\omega - \frac{1}{L\omega}\right)^2}$
$\psi = arctg\left(\frac{C\omega - \frac{1}{L\omega}}{\frac{G_0}{2}}\right)$	$G = \frac{G_0}{2}$	$B = C\omega - \frac{1}{L\omega}$

Exercice n°4

$$(\underline{a}_i) = \begin{pmatrix} 2 & 3R \\ \frac{1}{R} & 2 \end{pmatrix} \qquad (\underline{g}) = \begin{pmatrix} \frac{1}{2R} & -\frac{1}{2} \\ \frac{1}{2} & \frac{3R}{2} \end{pmatrix}$$

Exercice n°5

$\underline{A}_v = \frac{1}{3}$	$\underline{A}_i = -\frac{1}{5}$	$A_p = \frac{1}{15}$	
$\underline{Z}_E = \frac{3R}{5}$	$\underline{Z}_S = \frac{3R}{5}$	$Z_C = \frac{R}{\sqrt{3}}$	
$\underline{Z}_{TD} = \frac{R}{5}$	$\underline{Z}_{TI} = -3R$	$\underline{Y}_{TD} = -\frac{1}{3R} = -\frac{G}{3}$	$\underline{Y}_{TI} = \frac{5}{R} = 5G$

Correction contrôle n°1 CPI2 : Groupe2

Exercice n°1

$$R_{CD} = \frac{5R}{13}$$

Exercice n°2

$$I = \frac{I_G}{8}$$

Exercice n°3

$\underline{Z}_{AB} = \frac{R_0}{2} + j\left(L\omega - \frac{1}{C\omega}\right)$		$Z_{AB} = \sqrt{\left(\frac{R_0}{2}\right)^2 + \left(L\omega - \frac{1}{C\omega}\right)^2}$
$\varphi = arctg\left(\frac{L\omega - \frac{1}{C\omega}}{\frac{R_0}{2}}\right)$	$R = \frac{R_0}{2}$	$X = L\omega - \frac{1}{C\omega}$

Exercice n°4

$$(\underline{y}) = \begin{pmatrix} \frac{2}{R} & -\frac{1}{R} \\ -\frac{1}{R} & \frac{2}{R} \end{pmatrix} \qquad (\underline{g}) = \begin{pmatrix} \frac{3}{2R} & -\frac{1}{2} \\ \frac{1}{2} & \frac{R}{2} \end{pmatrix}$$

Exercice n°5

$\underline{A}_v = \frac{1}{5}$	$\underline{A}_i = -\frac{1}{3}$	$A_p = \frac{1}{15}$
$\underline{Z}_E = \frac{5R}{3}$	$\underline{Z}_S = \frac{5R}{3}$	$Z_C = \sqrt{3} \cdot R$

$\underline{Z}_{TD} = \frac{R}{3}$	$\underline{Z}_{TI} = -5R$	$\underline{Y}_{TD} = -\frac{1}{5R} = -\frac{G}{5}$	$\underline{Y}_{TI} = \frac{3}{R} = 3G$

Correction contrôle n°2 CPI2

Exercice n°1

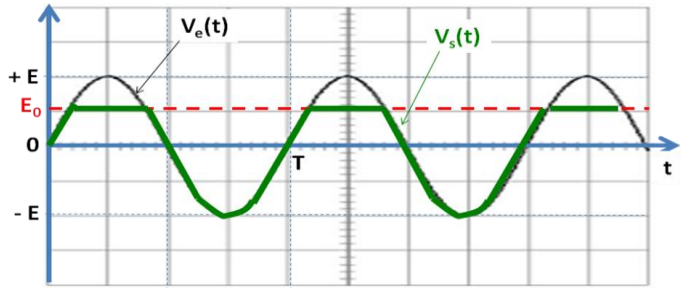
$(a)=\begin{pmatrix}1 & 0\\ 0 & 1\end{pmatrix}$	$(a)=\begin{pmatrix}-1 & 0\\ 0 & -1\end{pmatrix}$	$(a)=\begin{pmatrix}1 & 2R\\ 0 & 1\end{pmatrix}$	$(a)=\begin{pmatrix}-1 & -2R\\ 0 & -1\end{pmatrix}$

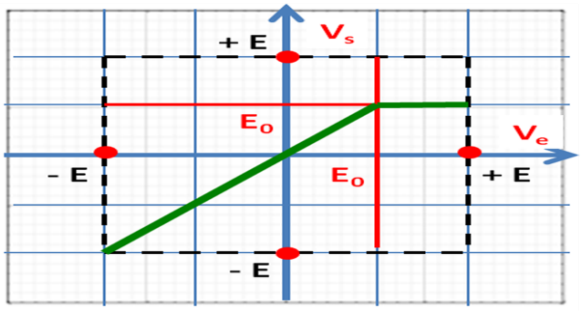
Exercice n°2

$\underline{A}_v=\frac{1}{3}$	$\underline{A}_i=-\frac{1}{2}$	$A_p=\frac{1}{6}$	
$\underline{Z}_E=\frac{3R}{2}$	$\underline{Z}_S=\frac{2R}{3}$	$Z_C=\sqrt{2}\cdot R$	
$\underline{Z}_{TD}=\frac{R}{2}$	$\underline{Z}_{TI}=-3R$	$\underline{Y}_{TD}=-\frac{1}{3R}=-\frac{G}{3}$	$\underline{Y}_{TI}=\frac{2}{R}=2G$

Exercice n°3 :

Si $V_e > E_0$ alors $V_s = E_0$	**Si $V_e < E_0$ alors $V_s = V_e$**



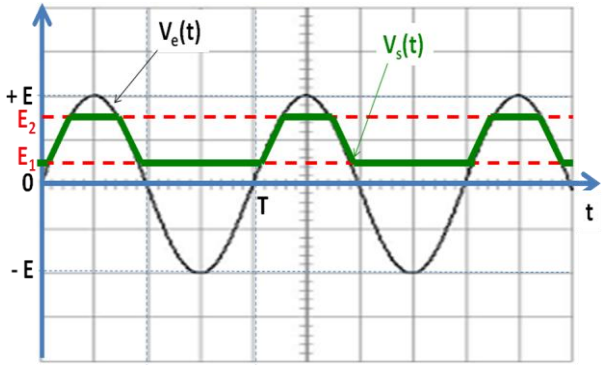


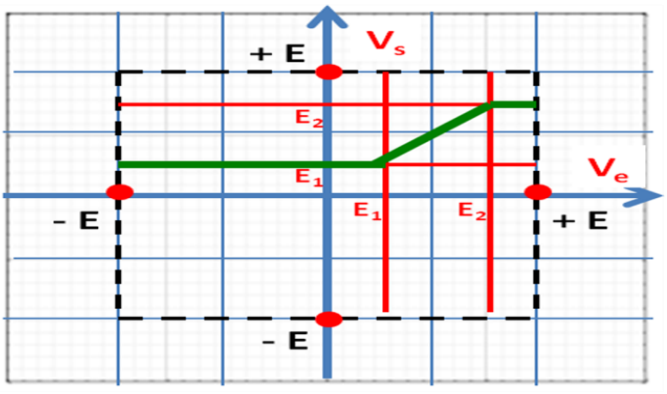
Exercice n°4 :

1°) $I=\frac{2E}{3R_0}$ et $I_d=\frac{E}{3R_0}$	2°) $I=\frac{E}{2R_0}$ et $I_d=0$

Exercice n°5 :

Tension V_e	État de D_1	État de D_2	Tension V_s
$V_e > E_2 > E_1$	B	P	$V_s = E_2$
$E_1 < V_e < E_2$	B	B	$V_s = V_e$
$V_e < E_1 < E_2$	P	B	$V_s = E_1$





Un montage limiteur

Correction Examen final CPI2

Exercice n°1 : Dipôles

$\underline{Z}_{AB} = \frac{R_0}{3} + j\left(L\omega - \frac{1}{2C\omega}\right)$		$Z_{AB} = \sqrt{\left(\frac{R_0}{3}\right)^2 + \left(L\omega - \frac{1}{2C\omega}\right)^2}$
$\varphi = arctg\left(\frac{L\omega - \frac{1}{2C\omega}}{\frac{R_0}{3}}\right)$	$R = \frac{R_0}{3}$	$X = L\omega - \frac{1}{2C\omega}$

Exercice n°2 : Quadripôles

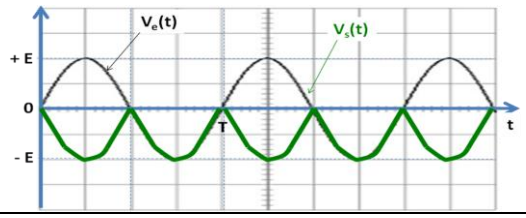
$(\underline{a}) = \begin{pmatrix} 1 & R \\ 1/R & 2 \end{pmatrix}$	$(\underline{z}) = \begin{pmatrix} R & R \\ R & 2R \end{pmatrix}$	$(\underline{y}) = \begin{pmatrix} 2/R & -1/R \\ -1/R & 1/R \end{pmatrix}$	$(\underline{h}) = \begin{pmatrix} R/2 & 1/2 \\ -1/2 & 1/2R \end{pmatrix}$

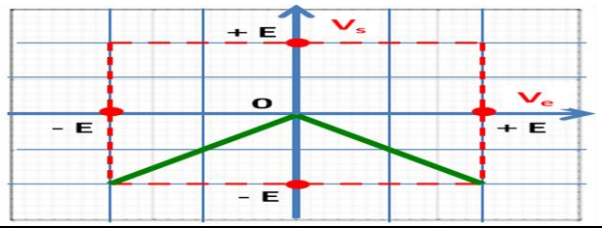
$\underline{A}_v = \frac{1}{2}$	$\underline{A}_i = -\frac{1}{3}$	$A_p = \frac{1}{6}$
$\underline{Z}_E = \frac{2R}{3}$	$\underline{Z}_S = \frac{3R}{2}$	$Z_C = \frac{R}{\sqrt{2}}$

$\underline{Z}_{TD} = \frac{R}{3}$	$\underline{Z}_{TI} = -2R$	$\underline{Y}_{TD} = -\frac{1}{2R} = -\frac{G}{2}$	$\underline{Y}_{TI} = \frac{3}{R} = 3G$

Exercice n°3 : Diodes

V_e	D_1	D_2	D_3	D_4	V_s
$V_e > 0$	B	P	B	P	$V_s = -V_e$
$V_e < 0$	P	B	P	B	$V_s = +V_e$





Un redressement double alternance

Exercice n°4 : Diodes

1°) $I = \frac{2E}{R}$ et $I_d = \frac{E}{R}$	2°) $I = \frac{3E}{2R}$ et $I_d = 0$

Exercice n°5 : Amplificateur opérationnel

1°) $V_s = \frac{V_1 + V_1 + V_1}{3}$	2°) Moyenneur