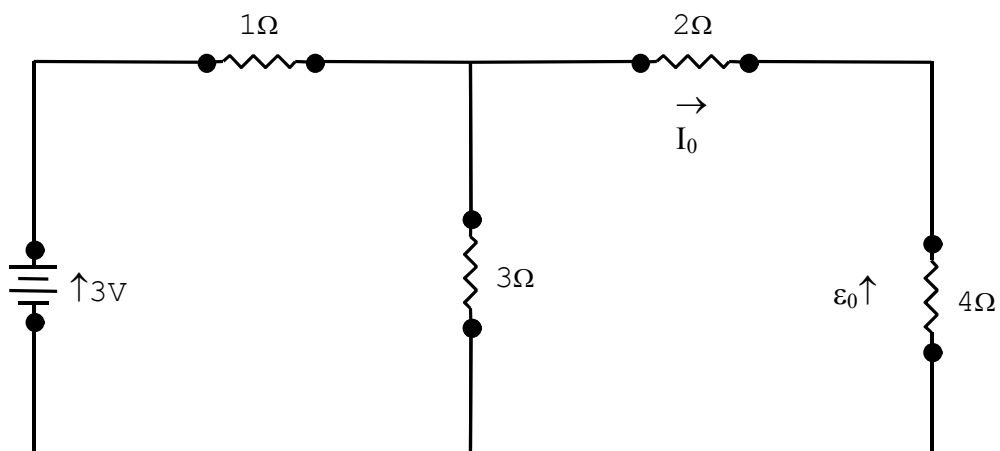


Eletricidade Aplicada
Lista de exercícios 1

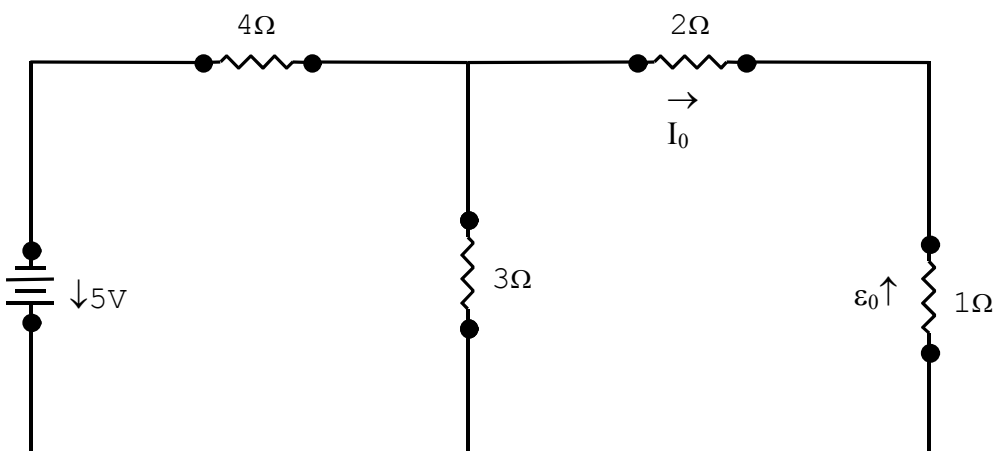
1.1) Divisor de tensão

Dados os circuitos abaixo, determine as correntes e tensões indicadas.

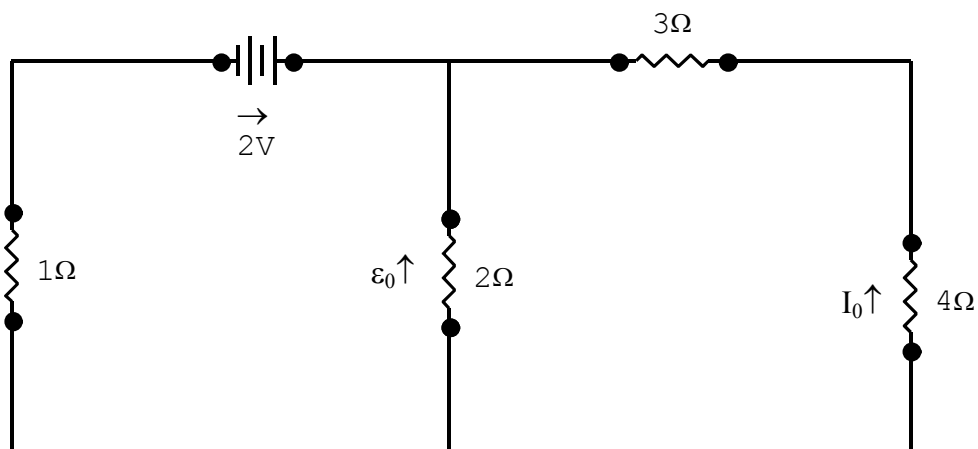
A)



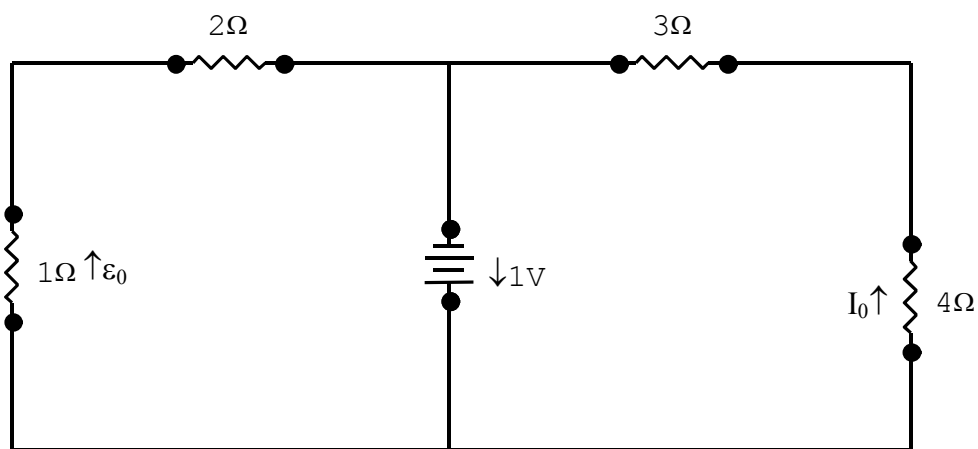
B)



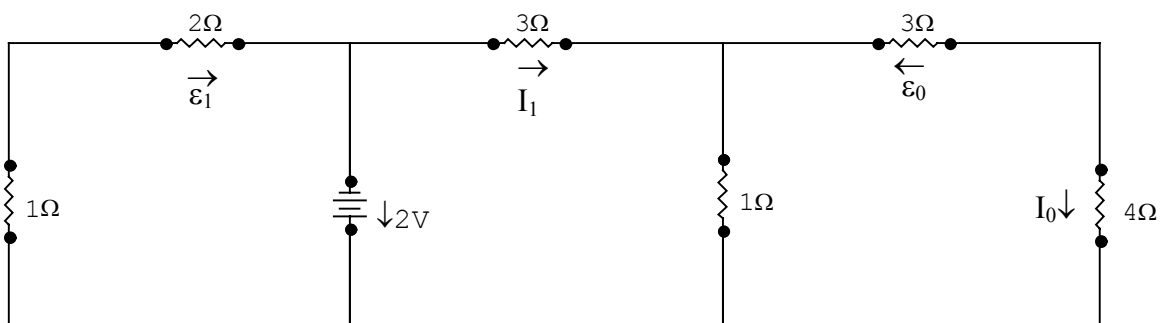
C)



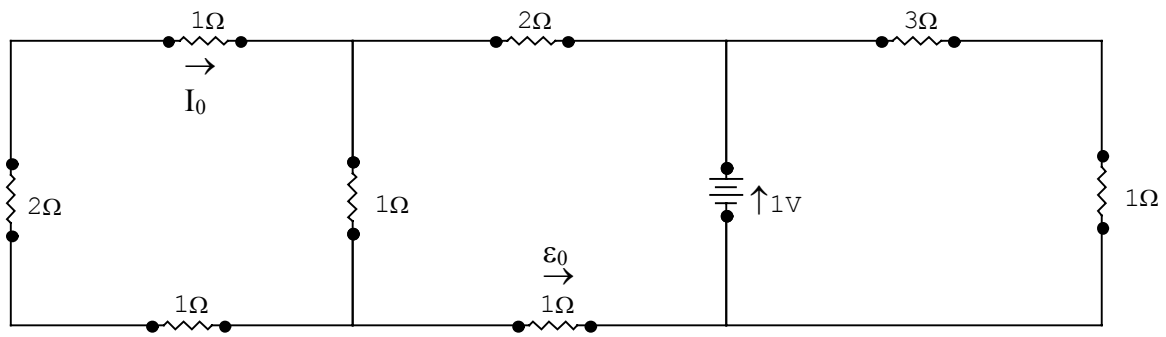
D)



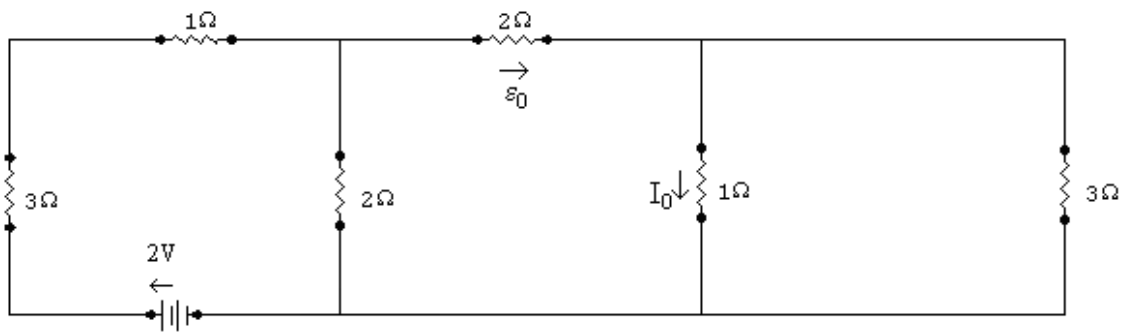
E)



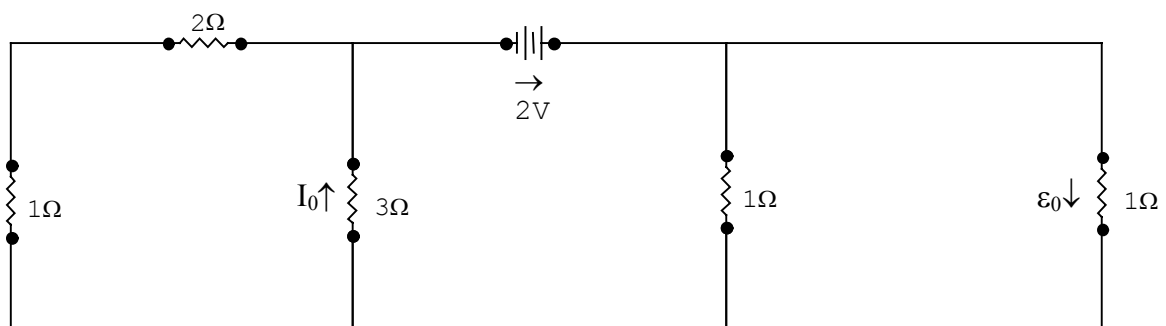
F)



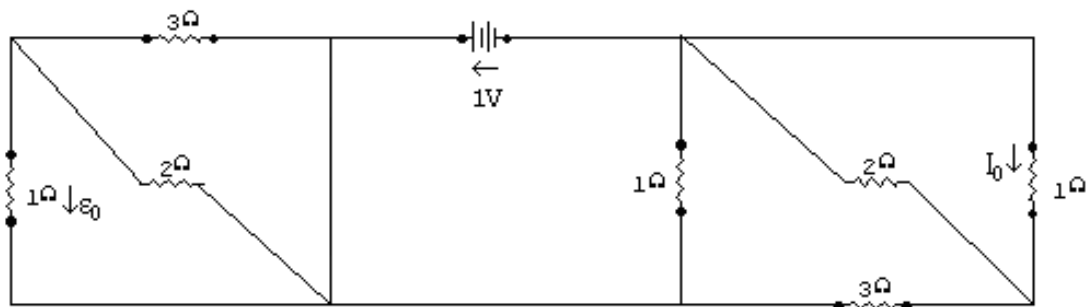
G)



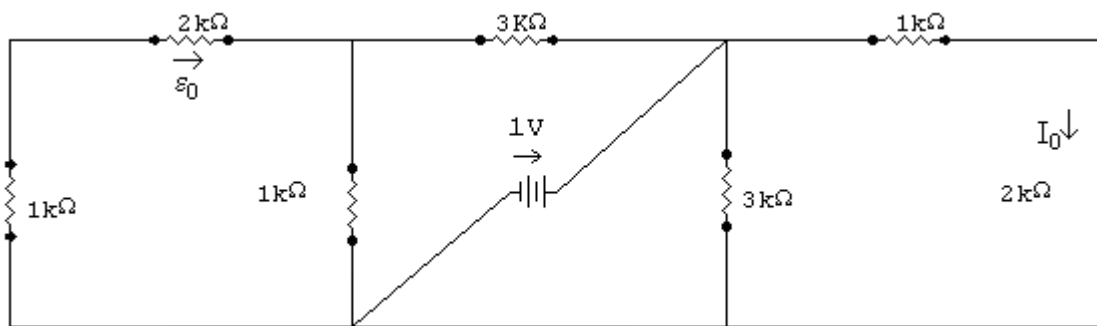
H)



D)

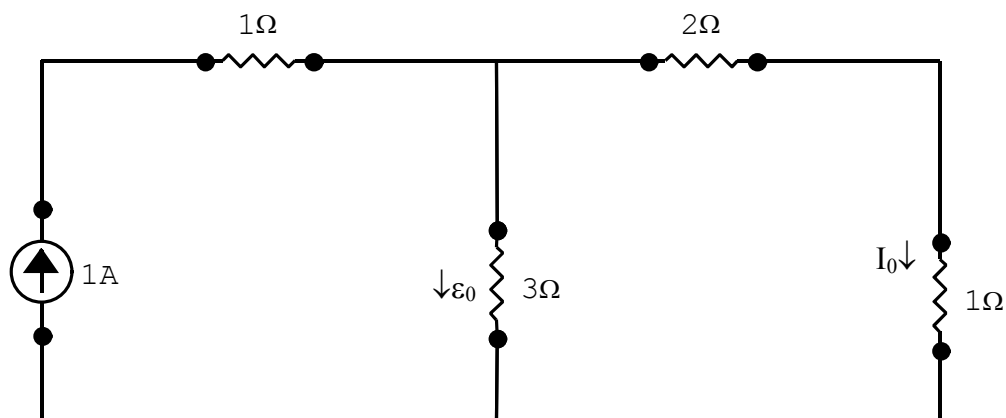


J)

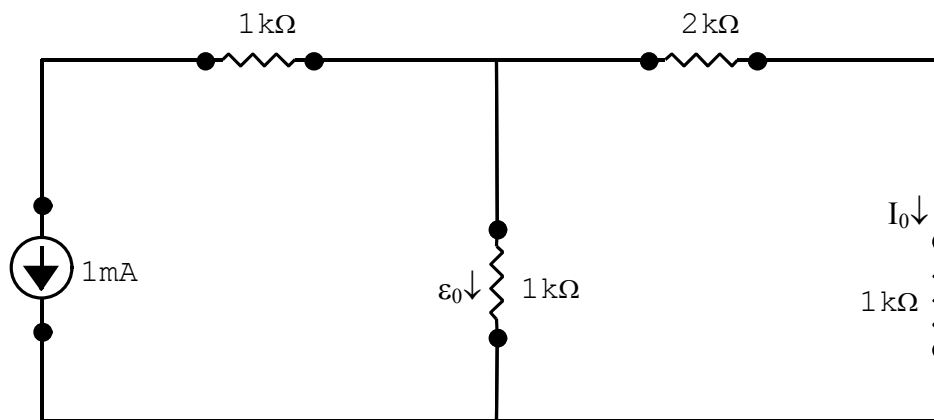


1.2) Divisor de corrente

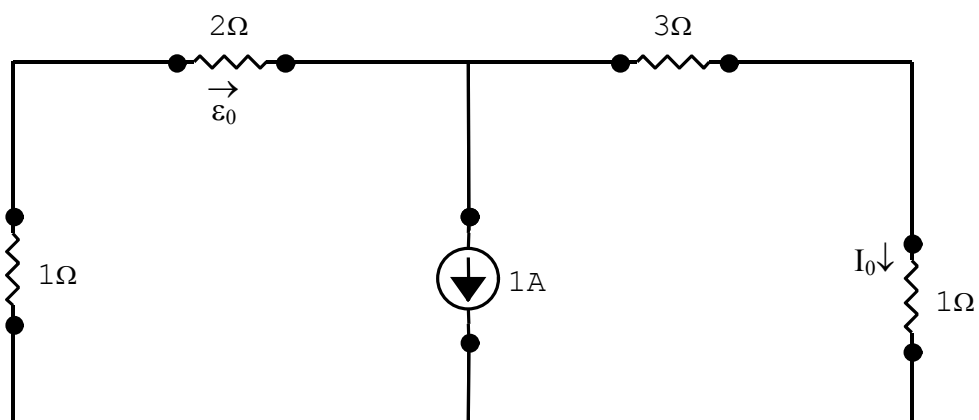
A)



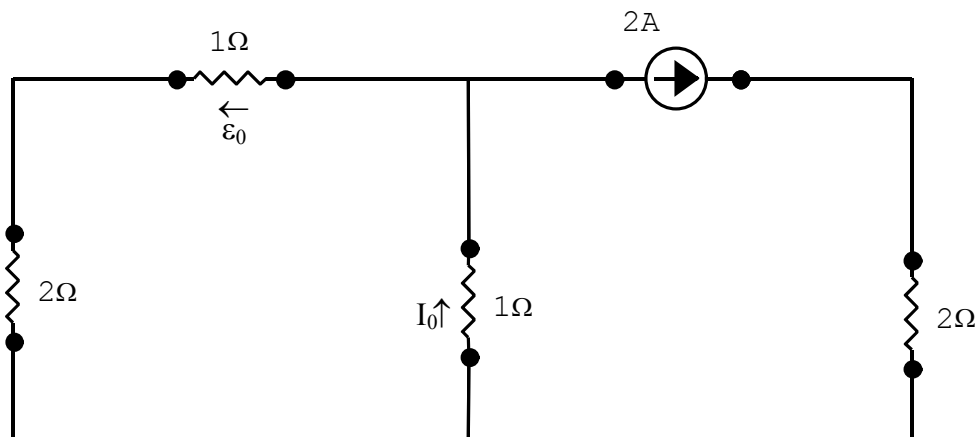
B)



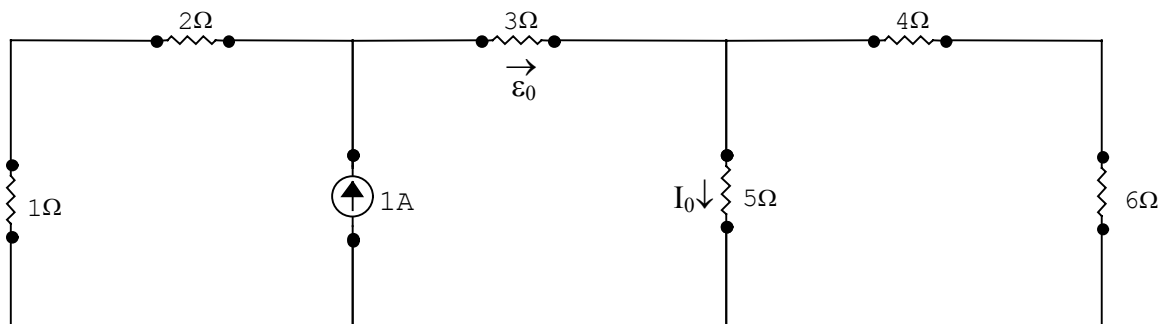
C)



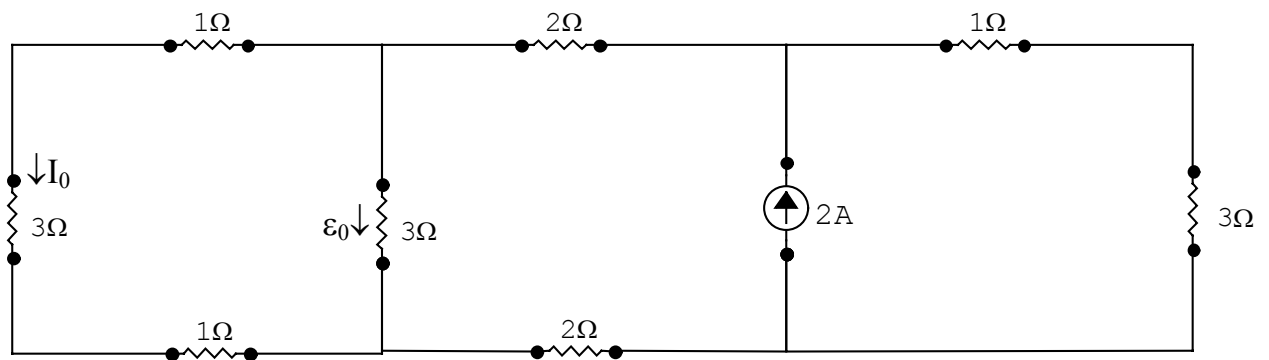
D)



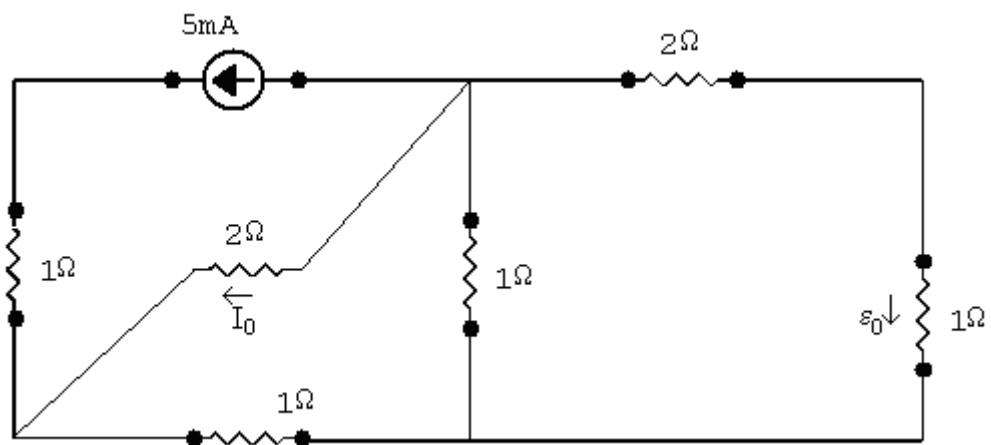
E)



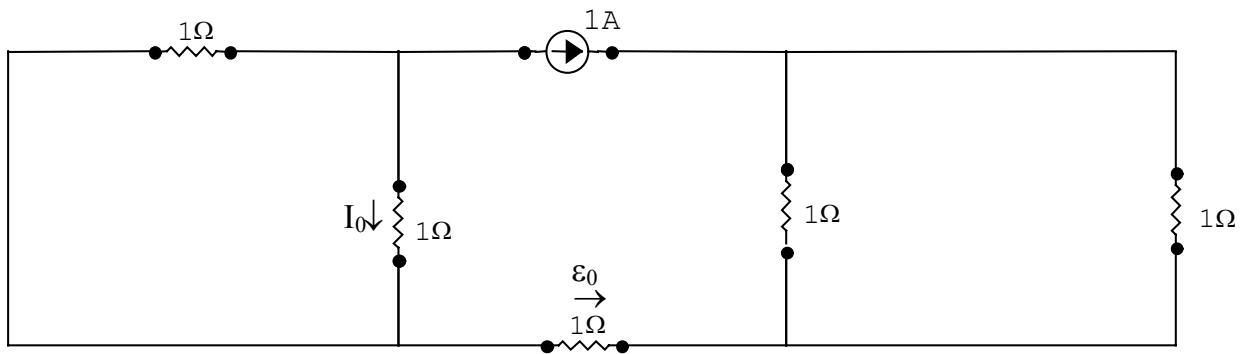
F)



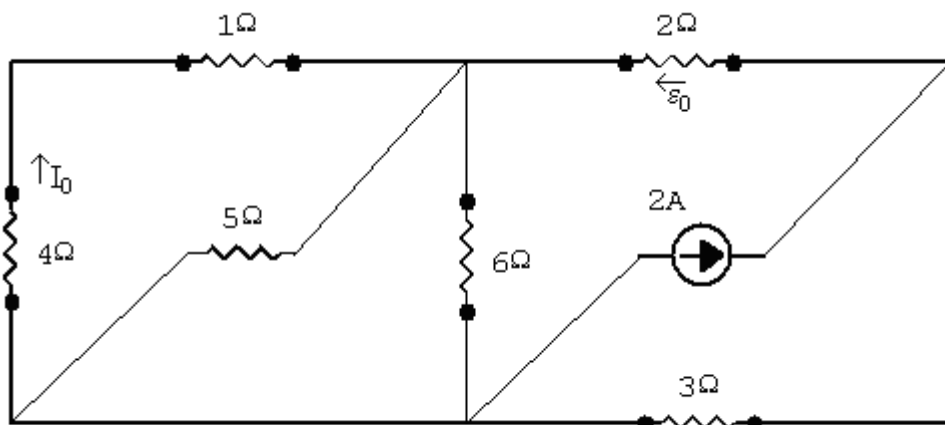
G)



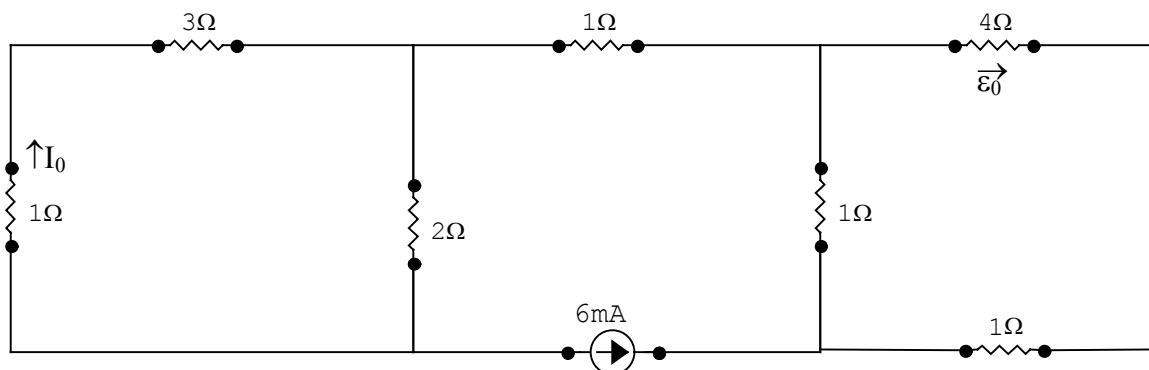
H)



D)

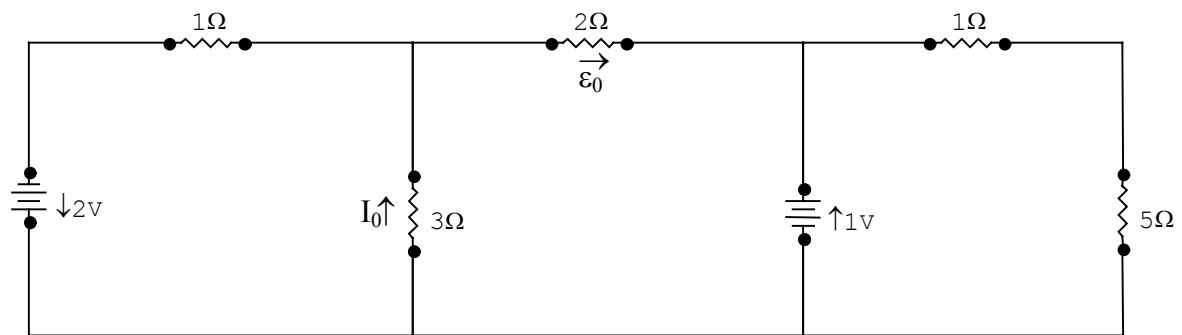


J)

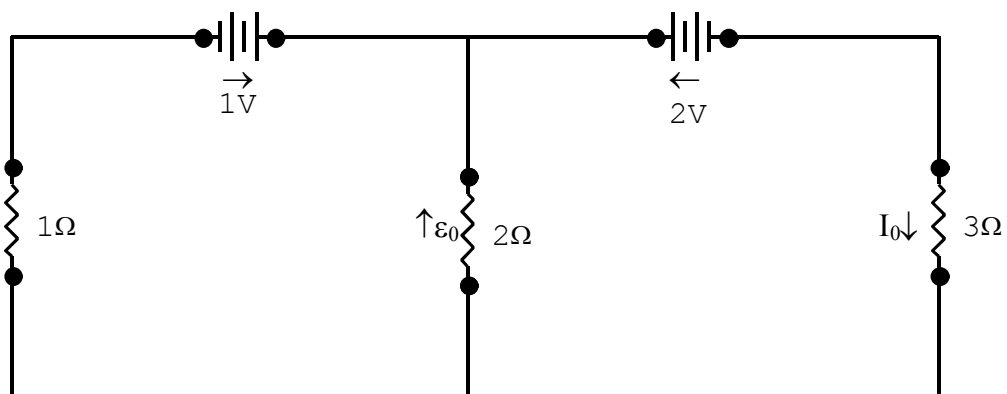


1.3) Teorema da superposição

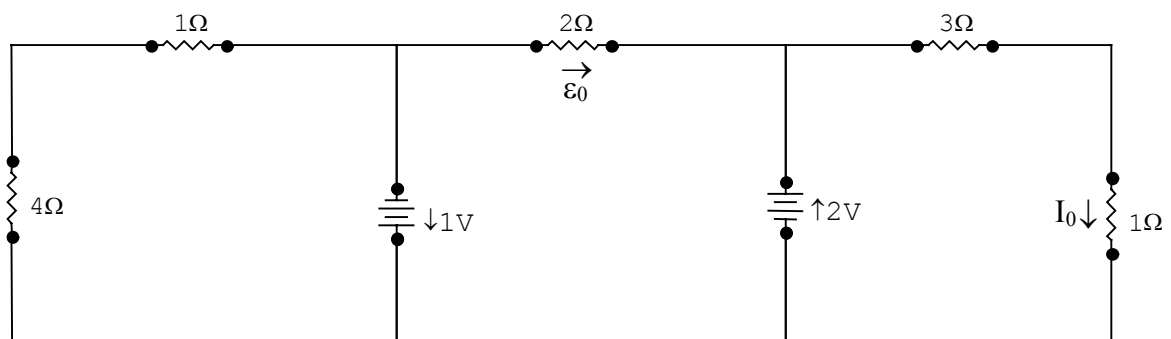
A)



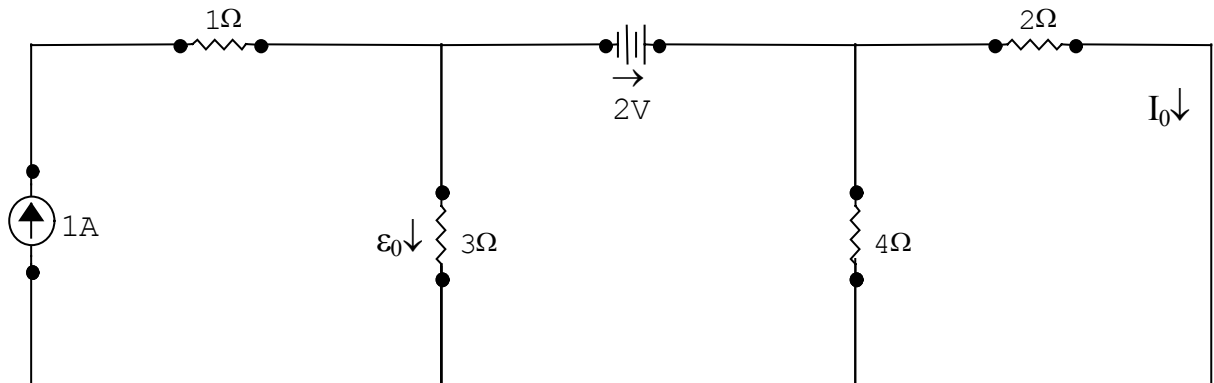
B)



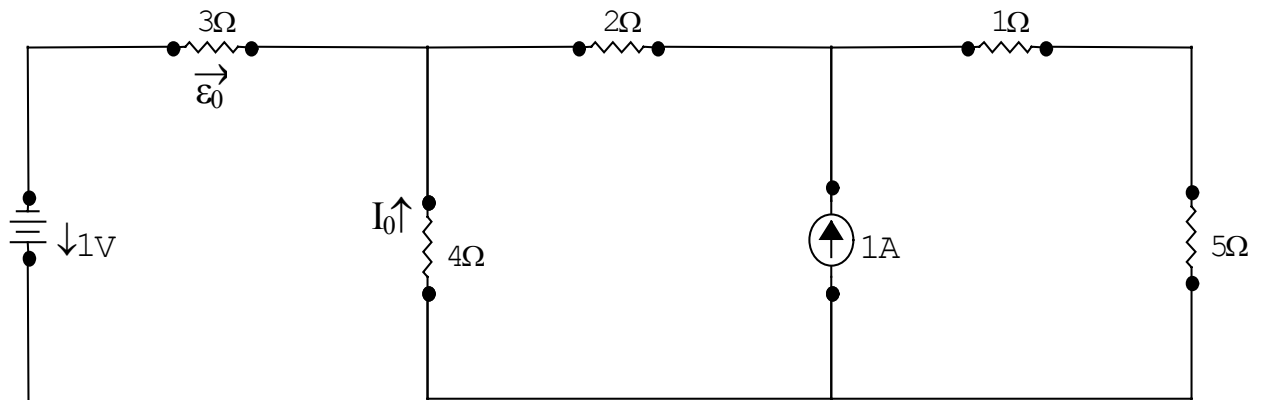
C)



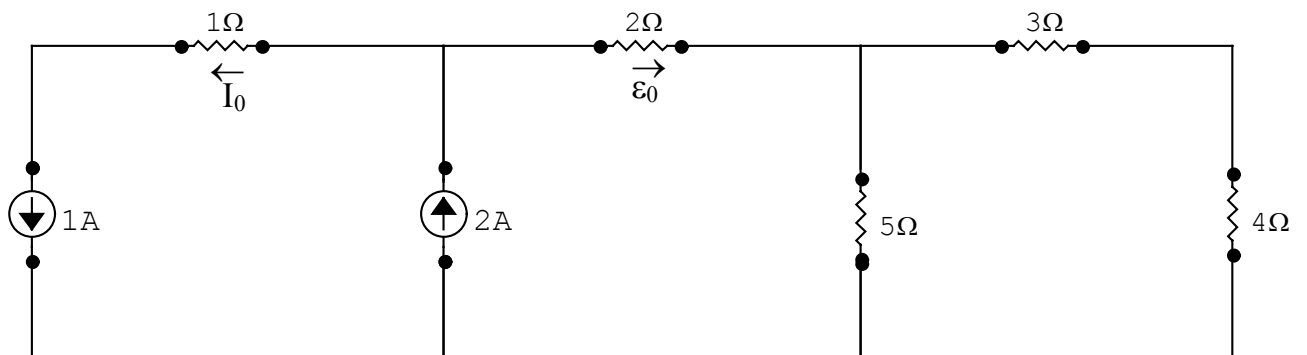
D)



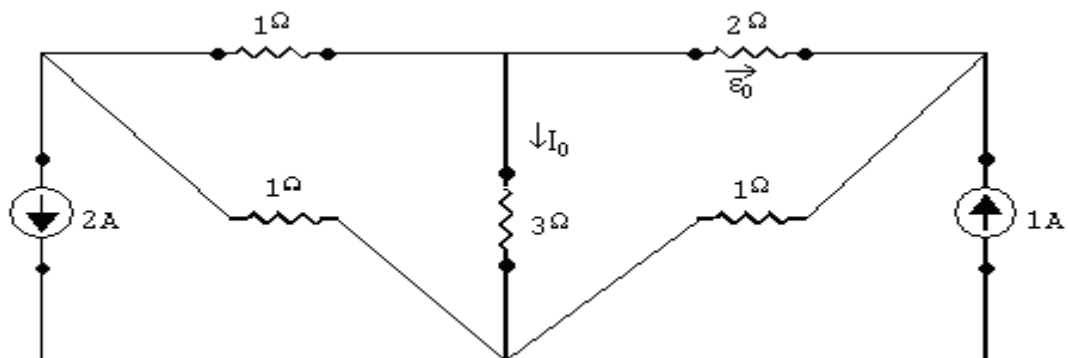
E)



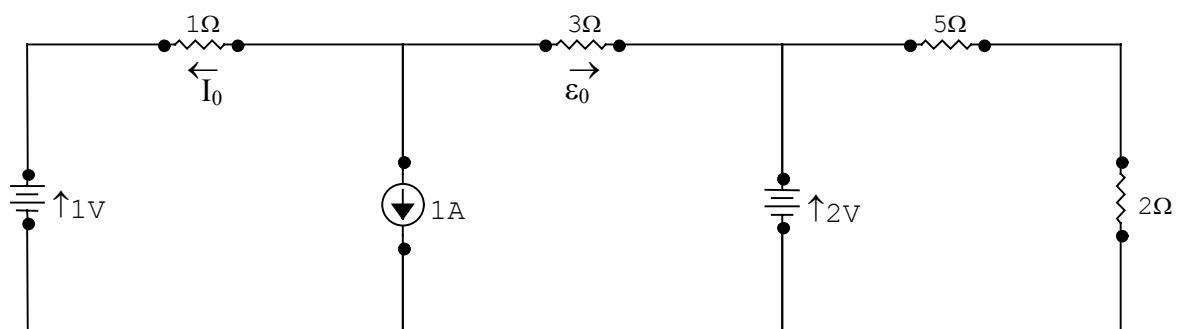
F)



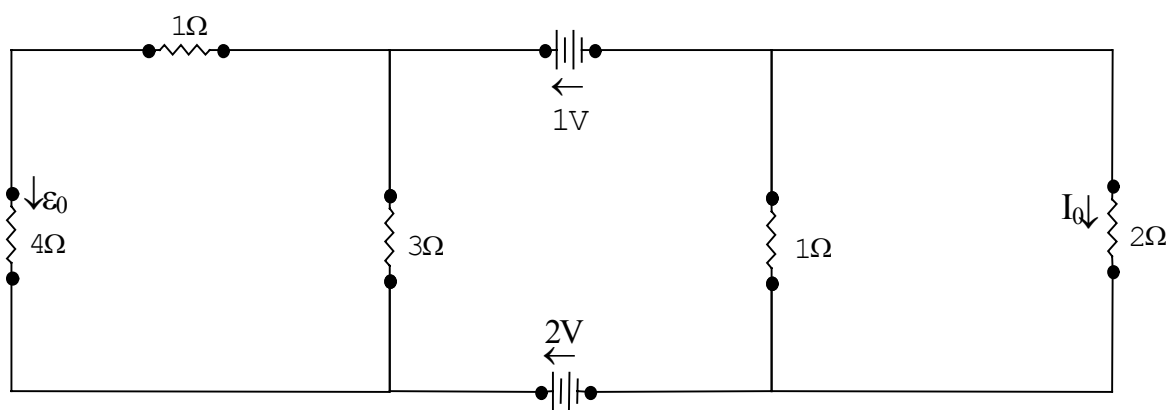
G)



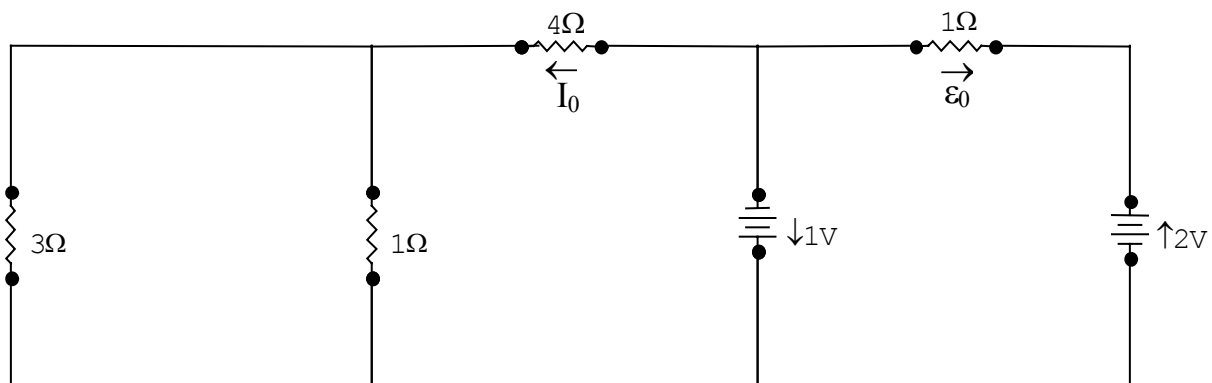
H)



I)

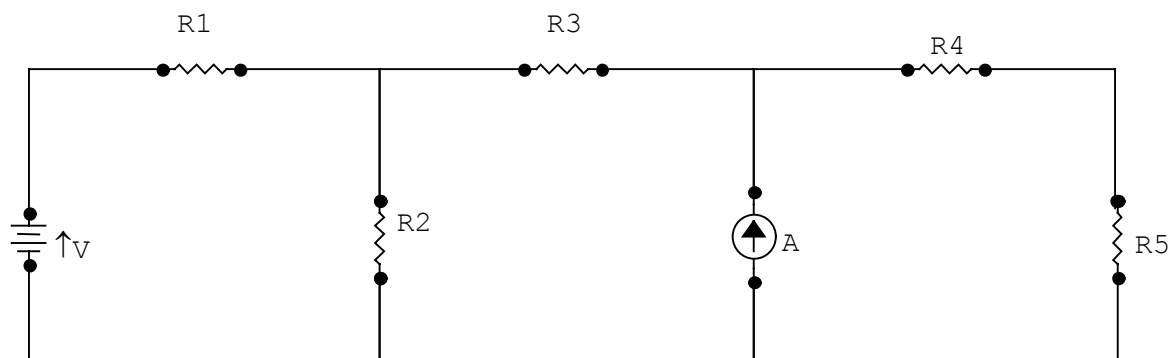


J)



Obs: Os teoremas de Thevenin, Norton e das equações nodais podem ser exercitados através dos problemas 1.1; 1.2 e 1.5.

1.4) Teorema da máxima transferência de potência



$P_L = ?$, $R_L = ?$

A)

$V = 1V$, $A = 1A$, $R_1 = 1\Omega$, $R_2 = 2\Omega$, $R_3 = 5\Omega$, $R_4 = 1\Omega$, $R_5 = R_L$, $P_L = ?$

B)

$V = -2V$, $A = \frac{1}{2} A$, $R_1 = 3\Omega$, $R_2 = 5\Omega$, $R_3 = R_L$, $R_4 = 1\Omega$, $R_5 = 2\Omega$, $P_L = ?$

C)

$V = 5V$, $A = -1A$, $R_1 = 1\Omega$, $R_2 = R_L$, $R_3 = 1\Omega$, $R_4 = 2\Omega$, $R_5 = 1\Omega$, $P_L = ?$

D)

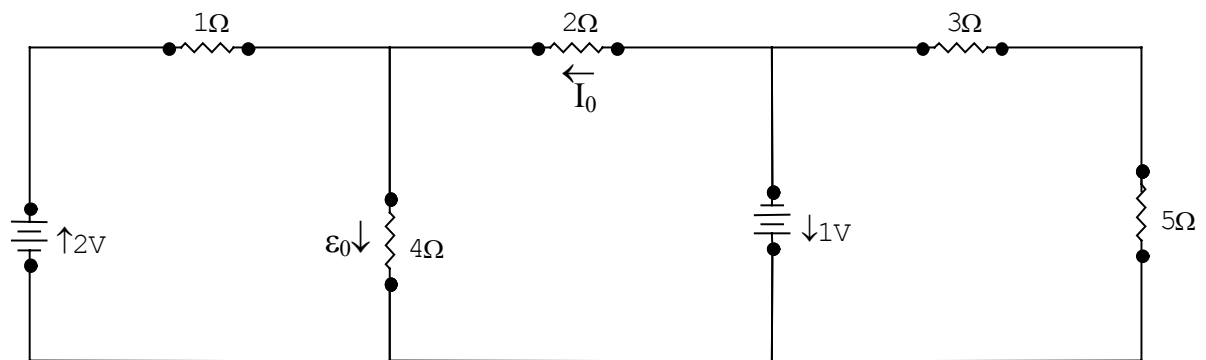
$V = 100\text{V}$, $A = 50\text{mA}$, $R_1 = 1\text{k}\Omega$, $R_2 = 2\text{k}\Omega$, $R_3 = 4\text{k}\Omega$, $R_4 = R_L$, $R_5 = 3\text{k}\Omega$, $P_L = ?$

E)

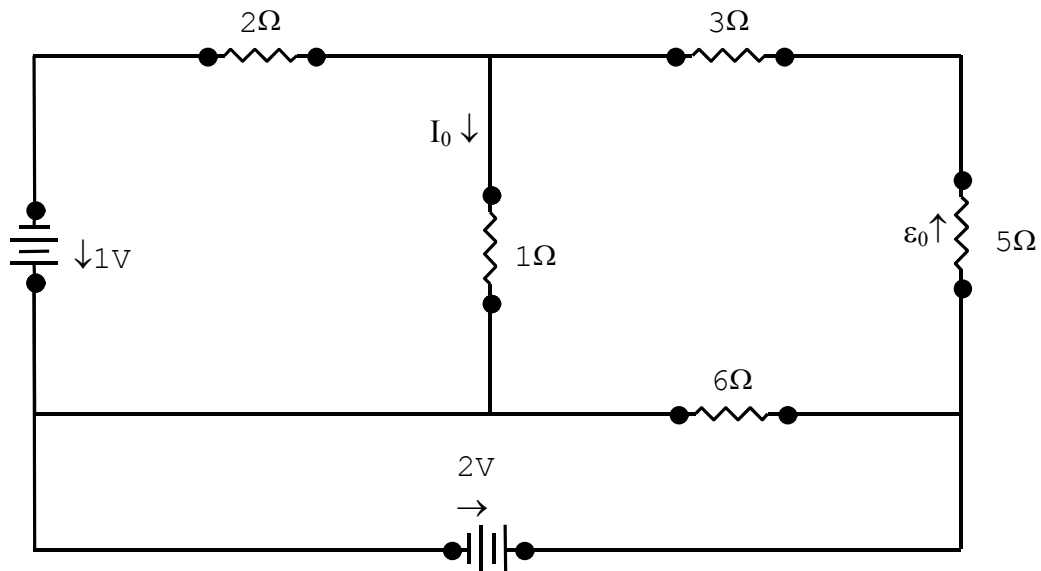
$V = -30\text{V}$, $A = -200\text{mA}$, $R_1 = 7\Omega$, $R_2 = 6\Omega$, $R_3 = 8\Omega$, $R_4 = 1\Omega$, $R_5 = R_L$, $P_L = ?$

1.5) Equações de laço

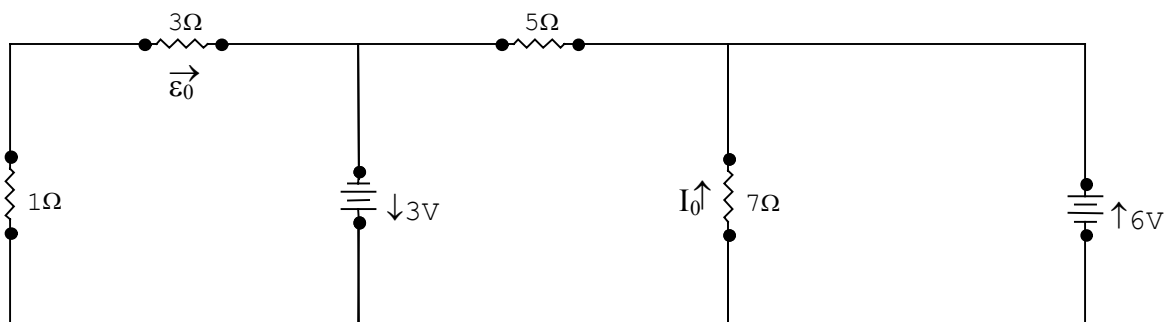
A)



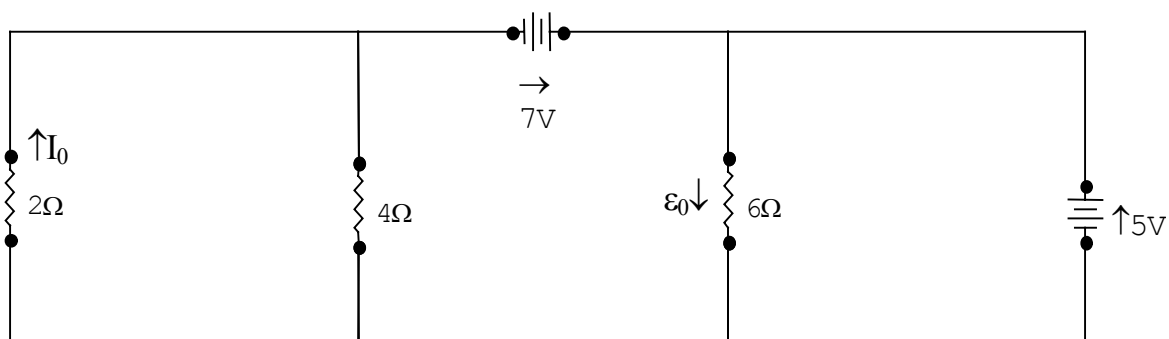
B)



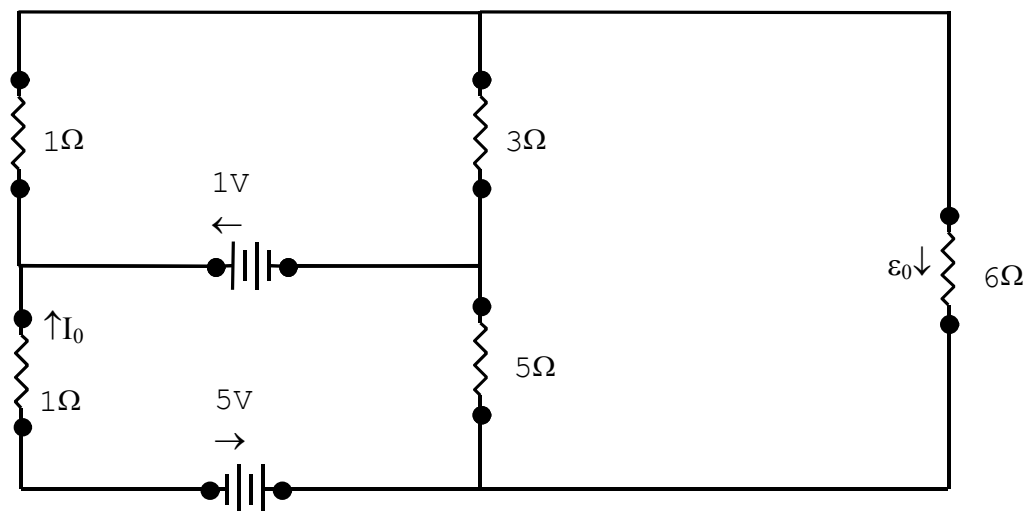
C)



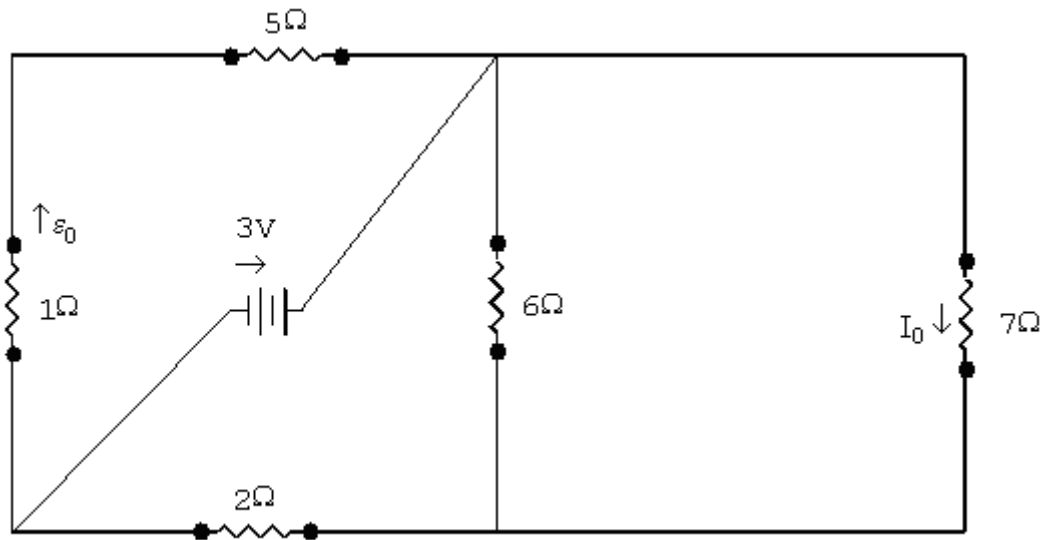
D)



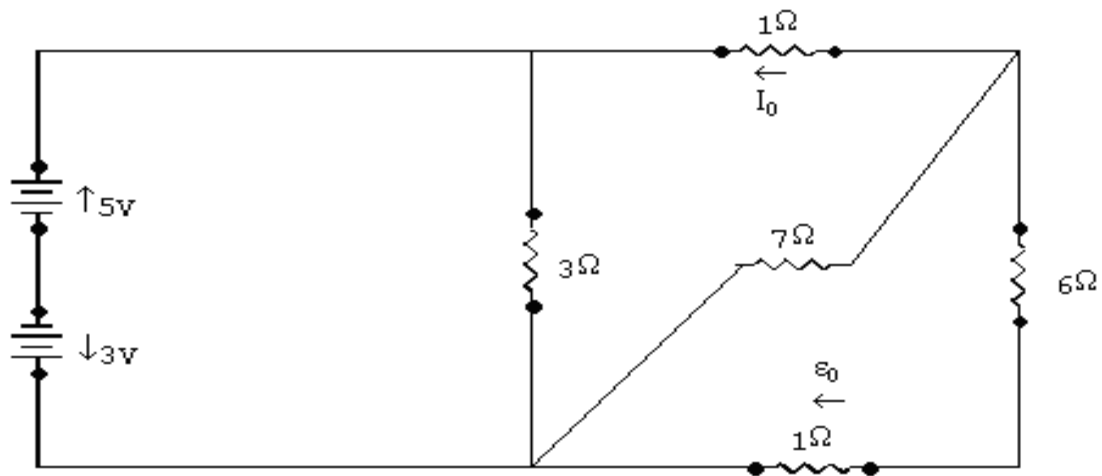
E)



F)



G)



Respostas

1.1)

A) $\varepsilon_0 = 4/3 \text{ V}$, $I_0 = 1/3 \text{ A}$

B) $\varepsilon_0 = -5/11 \text{ V}$, $I_0 = -5/11 \text{ A}$

C) $\varepsilon_0 = 28/23 \text{ V}$, $I_0 = -4/23 \text{ A}$

D) $\varepsilon_0 = -1/3 \text{ V}$, $I_0 = 1/7 \text{ A}$

E) $\varepsilon_0 = -6/31 \text{ V}$, $I_0 = -2/31 \text{ A}$

F) $\varepsilon_0 = -5/19 \text{ V}$, $I_0 = -1/19 \text{ A}$

G) $\varepsilon_0 = -16/49 \text{ V}$, $I_0 = 6/49 \text{ A}$

H) $\varepsilon_0 = -1/2 \text{ V}$, $I_0 = 1/2 \text{ A}$

I) $\varepsilon_0 = 0 \text{ V}$, $I_0 = -2/11 \text{ A}$

J) $\varepsilon_0 = 2/15 \text{ V}$, $I_0 = 1/3 \text{ mA}$

1.2)

A) $\varepsilon_0 = -3/2 \text{ V}$, $I_0 = 1/2 \text{ A}$

B) $\varepsilon_0 = 3/4 \text{ V}$, $I_0 = -1/4 \text{ mA}$

C) $\varepsilon_0 = -8/7 \text{ V}$, $I_0 = -3/7 \text{ A}$

D) $\varepsilon_0 = 1/2 \text{ V}$, $I_0 = 3/2 \text{ A}$

E) $\varepsilon_0 = 27/28 \text{ V}$, $I_0 = 3/14 \text{ A}$

F) $\varepsilon_0 = -120/79 \text{ V}$, $I_0 = 24/79 \text{ A}$

G) $\varepsilon_0 = 2/3 \text{ mV}$, $I_0 = -7/3 \text{ mA}$

H) $\varepsilon_0 = 1 \text{ V}$, $I_0 = -1/2 \text{ A}$

I) $\varepsilon_0 = -204/115 \text{ V}$, $I_0 = -612/1955 \text{ A}$

J) $\varepsilon_0 = 4 \text{ mV}$, $I_0 = -2 \text{ mA}$

1.3)

A) $\varepsilon_0 = 20/11 \text{ V}$, $I_0 = 3/11 \text{ A}$

B) $\varepsilon_0 = 10/11 \text{ V}$, $I_0 = -4/11 \text{ A}$

C) $\varepsilon_0 = 3 \text{ V}$, $I_0 = 1/2 \text{ A}$

D) $\varepsilon_0 = 6/13 \text{ V}$, $I_0 = 10/13 \text{ A}$

E) $\varepsilon_0 = 27/17 \text{ V}$, $I_0 = - 5/34 \text{ A}$

F) $\varepsilon_0 = - 2 \text{ V}$, $I_0 = 1 \text{ A}$

G) $\varepsilon_0 = 22/21 \text{ V}$, $I_0 = - 4/21 \text{ A}$

H) $\varepsilon_0 = 3/2 \text{ V}$, $I_0 = - 1/2 \text{ A}$

I) $\varepsilon_0 = 36/61 \text{ V}$, $I_0 = 8/61 \text{ A}$

J) $\varepsilon_0 = 3 \text{ V}$, $I_0 = - 4/19 \text{ A}$

1.4)

A) $R_L = 20/3 \Omega$, $P_L = 361/240 \text{ w}$

B) $R_L = 39/8 \Omega$, $P_L = 121/312 \text{ w}$

C) $R_L = 4/5 \Omega$, $P_L = 289/80 \text{ w}$

D) $R_L = 23/3 \text{ k}\Omega$, $P_L = 67500/23 \text{ mw} = 2,935 \text{ w}$

E) $R_L = 159/13 \Omega$, $P_L = 43764,64/8268 \text{ w} = 5,293 \text{ w}$

1.5)

A) $\varepsilon_0 = - 6/7 \text{ V}$, $I_0 = - 13/14 \text{ A}$

B) $\varepsilon_0 = - 35/26 \text{ V}$, $I_0 = - 2/13 \text{ A}$

C) $\varepsilon_0 = - 9/4 \text{ V}$, $I_0 = - 6/7 \text{ A}$

D) $\varepsilon_0 = - 5 \text{ V}$, $I_0 = 1 \text{ A}$

E) $\varepsilon_0 = 612/182 \text{ V}$, $I_0 = - 267/182 \text{ A}$

F) $\varepsilon_0 = 1/2 \text{ V}$, $I_0 = 63/238 \text{ A}$

G) $\varepsilon_0 = - 2/9 \text{ V}$, $I_0 = - 4/9 \text{ A}$