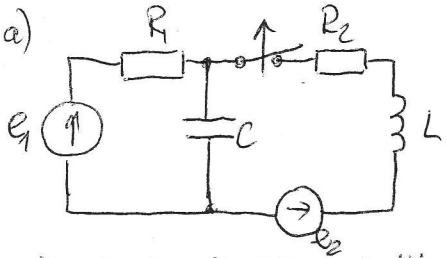
Circuits & systems II — Tutorial No 1

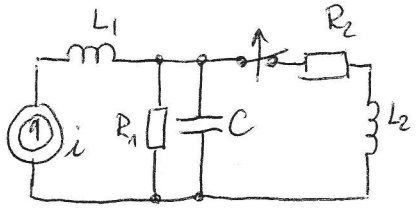
1. Determine the initial conditions (only) in the circuit

a)



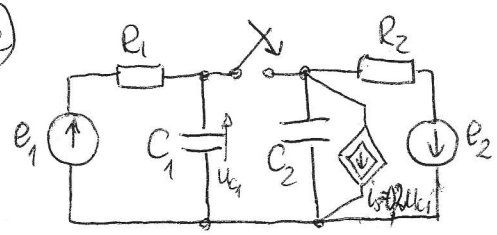
$e_1(t) = 20V$, $R_1 = 5\Omega$, $L = 1H$
$e_2(t) = 30V$, $R_2 = 10\Omega$, $C = 1\mu F$

b)



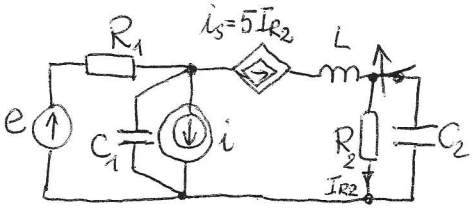
$i(t) = 5A$ $L_1 = 1H$
$R_1 = 10\Omega$ $L_2 = 2H$
$R_2 = 20\Omega$ $C = 10\mu F$

c)



$e_1(t) = 100V$, $R_1 = 100\Omega$, $C_1 = 10\mu F$
$e_2(t) = 200V$, $R_2 = 50\Omega$, $C_2 = 20\mu F$

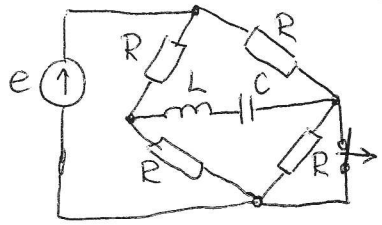
d)



$e = 20V$, $R_1 = 2\Omega$ $C_1 = C_2 = 10\mu F$
$i = 2A$, $R_2 = 5\Omega$ $L = 2H$

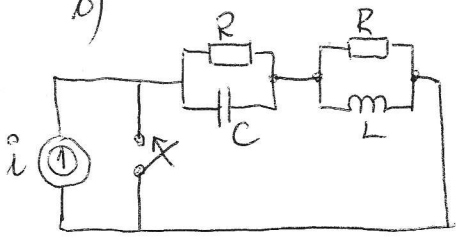
2. Determine the initial conditions (only) in the circuit

a)



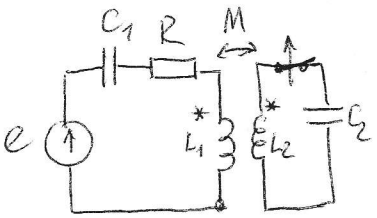
$e(t) = 20\sqrt{2}\sin 2t$ $L = 1H$
$R = 10\Omega$ $C = 0.5F$

b)



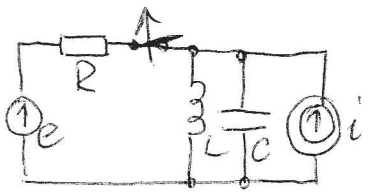
$i(t) = 10\sin(t + 90°)$ $C = 1F$
$R = 2\Omega$ $L = 1H$

c)



$e(t) = 20\sqrt{2}\sin(\omega t + 90°)$
$L_1 = L_2 = 2H$ $M = 1H$
$C_2 = 0.5F$, $C_1 = 1F$

d)



$e(t) = 20\sqrt{2}\sin(t + 45°)$ $R = 5\Omega$
$i(t) = 5\sqrt{2}\sin(t + 90°)$ $L = 1H$
$C = 1F$