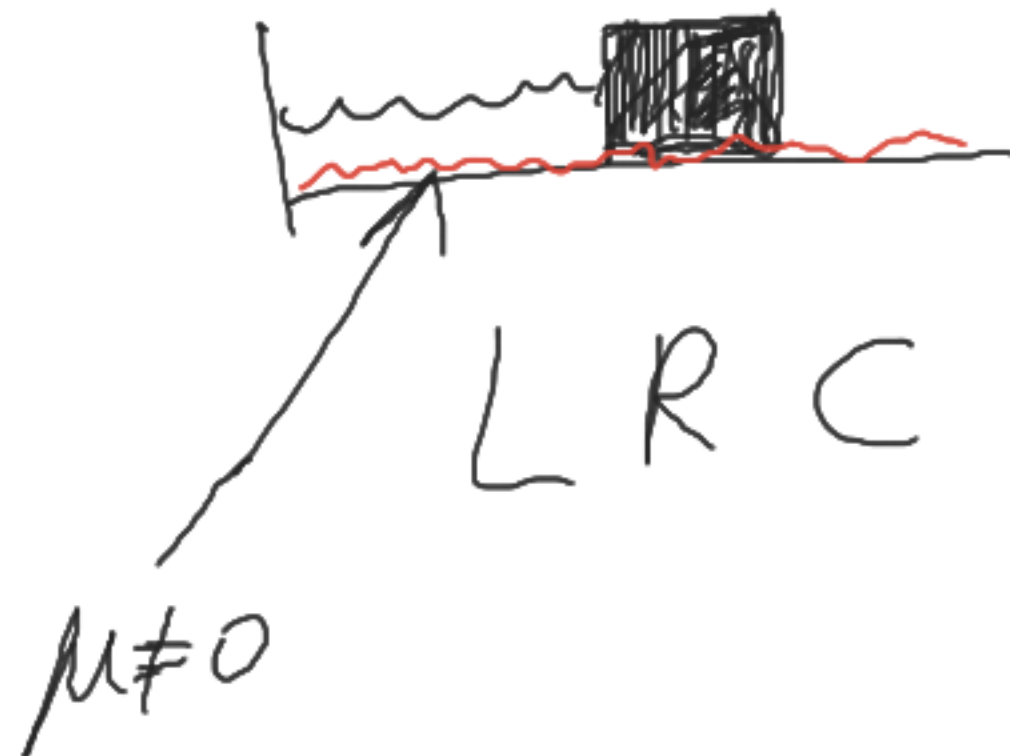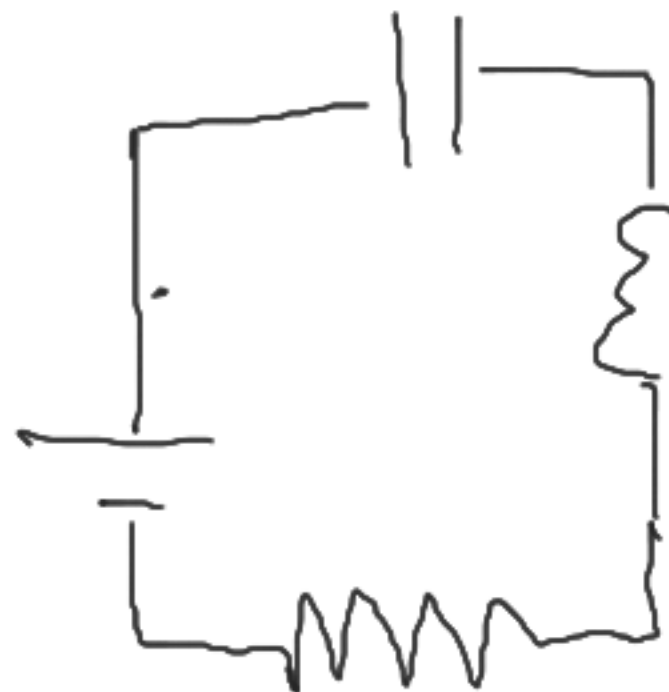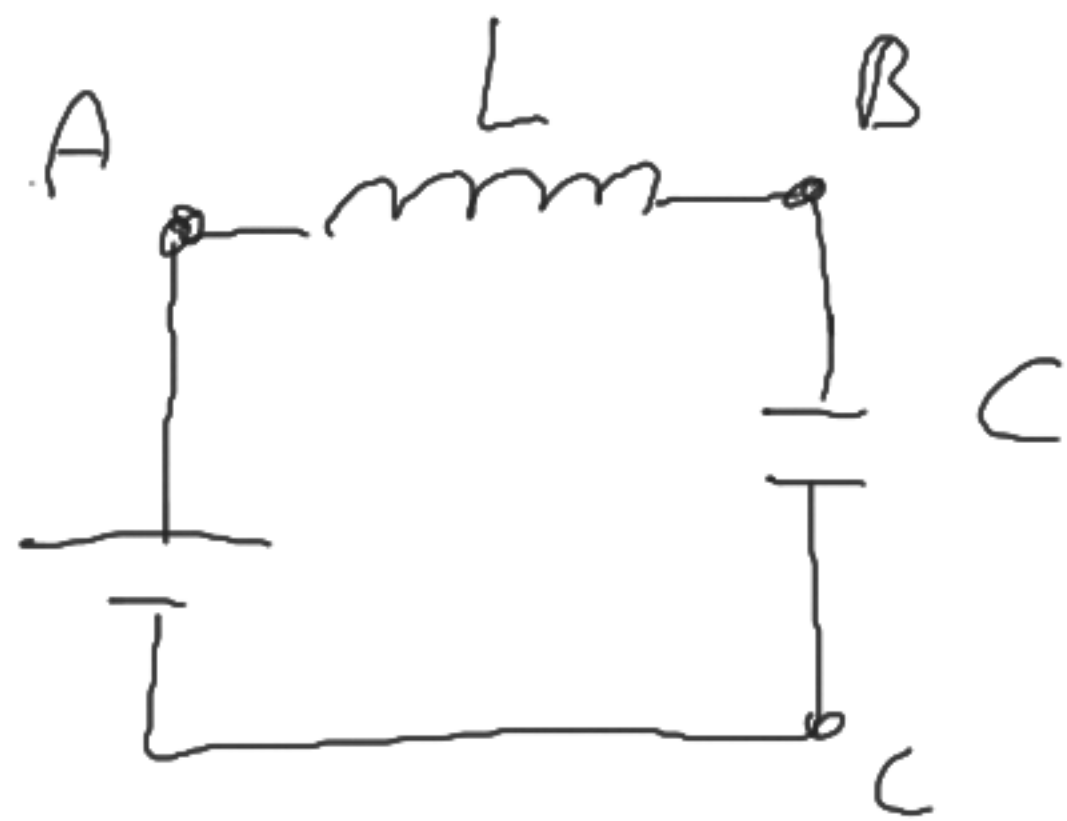$\mu = 0$

LC

$\mu \neq 0$

LRC

?

$\phi V_{AB} \neq \phi V_{BC}$

$\Delta \phi = ?$

$$V(t) = V_o \cos(\omega t + \phi)$$

$$i(t) = i_o \, \text{sen}(\omega t + \phi)$$

$$L = V \cdot \frac{di}{dt} = V_o \cos(\omega t + \phi) \, i_o \omega \cos(\omega t + \phi)$$

$$= V_o \cdot i_o \cdot \omega \cdot \cos^2(\omega t + \phi)$$

(circuit diagram labels: A, L, B, C, C)

$$V_{(t)} = \frac{q(t)}{C}$$

$$i(t) = \frac{dq}{dt}$$

$$\dot{i}(t) = \boxed{i_o} \, sen(wt + \phi)$$

$$q(t) = K \cdot cos(wt + \phi)$$

$$\frac{dq(t)}{dt} = \boxed{-K \cdot w} \, sen(wt + \phi)$$

$$\dot{i}_o = -Kw$$

$$\longrightarrow K = -\frac{i_o}{w}$$

$$q(t) = -\frac{i_o}{w} \cdot cos(wt + \phi)$$

$$V(t) = -\boxed{\frac{i_0}{\omega C}} \cos(\omega t + \phi)$$

$$V(t) = \boxed{V_0 \, i_0 \, \omega} \cos^2(\omega t + \phi)$$

X AVERE
SOVRAPPOSIZIONE
DEVO ANDARE
DIETRO DI π

$$\Rightarrow \boxed{\Delta \phi = \pi}$$

LC

$C = 85 \, mF$

$\Delta V_{MAX} \, (t = 0)$

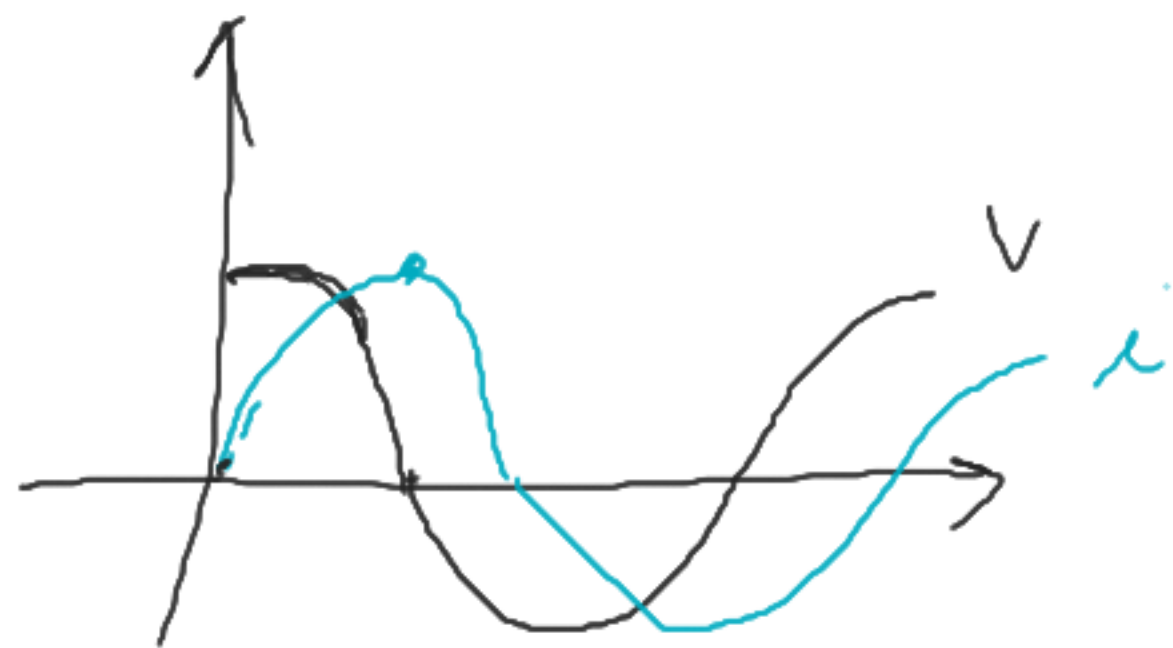i_{MAX} $\Delta t = 1,2 \cdot 10^{-6} \, s$

$\lfloor \, \rangle = 24 \, mA$

$L = V \dfrac{di}{dt}$

1) $L = ?$

$$i(t) = i_0 \cdot \text{sen}(\omega t)$$

$$V(t) = V_0 \cos(\omega t)$$

$$L = V_0 \, i_0 \, \omega \cos^2(\omega t)$$

$$L(0) =$$

$$L = V \cdot \frac{\Delta i}{\Delta t} = V \frac{24 \, mA}{1,2 \cdot 10^{-6} \, s}$$

$$\Delta \phi = \frac{\pi}{2}$$

$$i = \frac{\Delta Q}{\Delta t} \quad \rightarrow \quad i \cdot \Delta t = \Delta Q$$
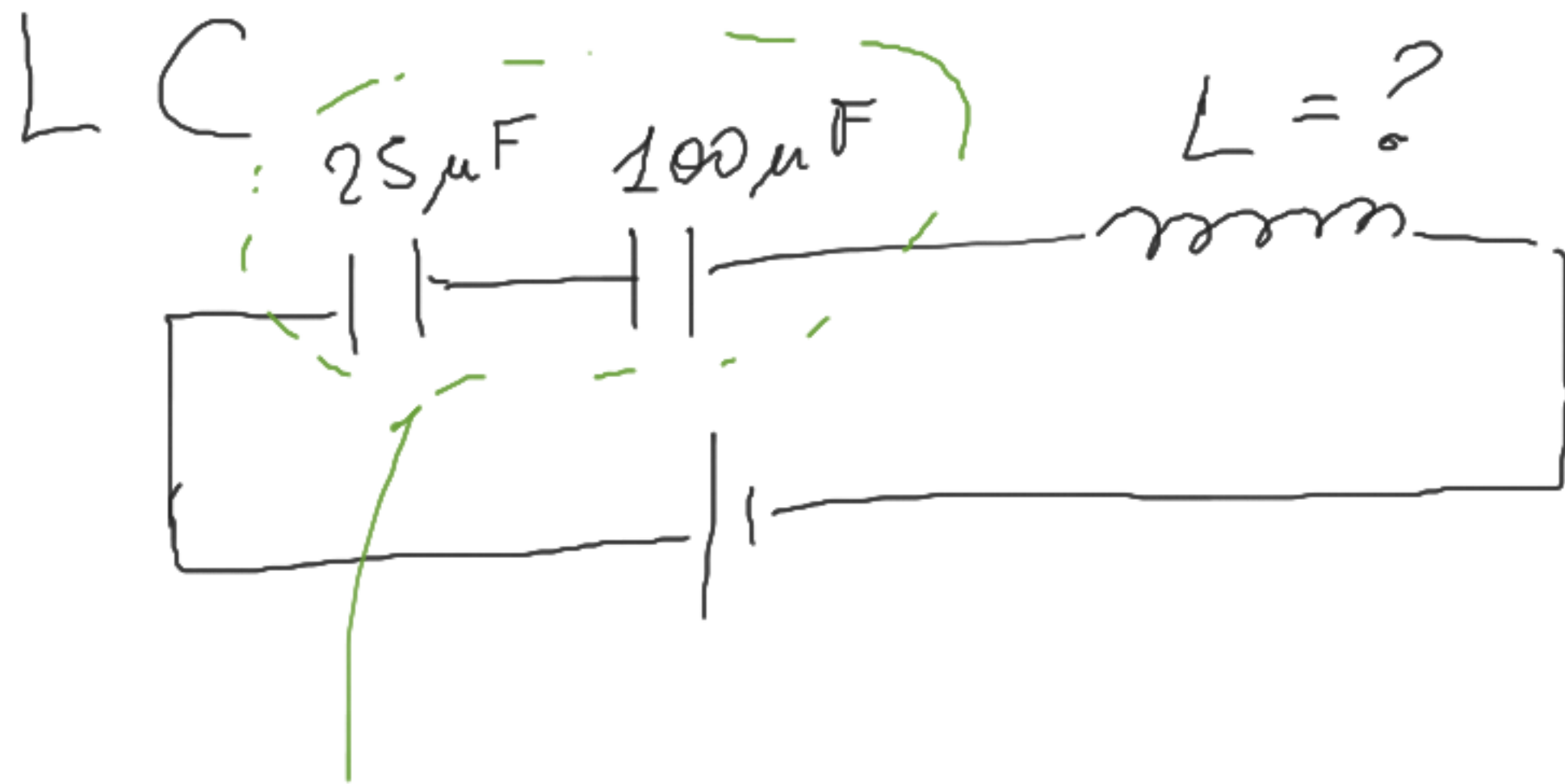
$$1{,}2 \cdot 10^{-6} \cdot 24 \, mAs = \Delta Q$$

$$\Delta V = \frac{1{,}2 \cdot 24 \cdot 10^{-9}}{85 \cdot 10^{-9}} = 0{,}338 \, V$$

$$L = 0{,}338 \cdot \frac{24 \cdot 10^{-3}}{1{,}2 \cdot 10^{-6}} = 0{,}338 \cdot 10^{3} \cdot 20$$

$$LC \quad 25\mu F \quad 100\mu F \qquad L = ?$$

$$i(t) = 12 mA \cdot sen(314 \cdot t)$$

$$i_{MAX} = 12 mA$$

$$\omega = \frac{1}{\sqrt{LC}}$$

$$\frac{1}{\frac{1}{25} + \frac{1}{100}} = \frac{1}{\frac{5}{100}} = \frac{1}{\frac{1}{20}} \mu F = 20$$

$$LC = \frac{1}{\omega^2} \rightarrow L = \frac{1}{\omega^2 C} = \frac{1}{0.05 \cdot 10^{-6} \cdot 314^2}$$

$$= \frac{1}{4929 \cdot 10^{3}}$$

$$= 0,20288 \cdot 10^3 \text{ H}$$

$$= 202,8 \text{ H}$$

0,51 H

$$L = \frac{1}{314^2 \cdot 20 \cdot 10^{-6}}$$

$$C = 120 \text{ nF}$$

$$\omega = ?$$

$$V_{MAX} = ?$$

$$L = \cfrac{1}{(1,6 \cdot 10^6)^2 \cdot 120 \cdot 10^{-9}}$$

$$= \cfrac{1}{1,6^2 \cdot 1,20 \cdot 10^{12} \cdot 10^{-9} \cdot 10^2}$$

$$= \cfrac{1}{1,6^2 \cdot 1,2 \cdot} = 3,25 \cdot 10^{-6}$$

$$L = V \cdot \frac{\Delta i}{\Delta t}$$

$$V = L \cdot \frac{\Delta t}{\Delta i} = \qquad \begin{array}{l} \Delta t = 1 \\ \Delta i = 0,0075 \text{ A} \end{array}$$

$$= \frac{3,25 \cdot 10^{-6}}{0,0075} = 4,33$$

$$\frac{3,25 \cdot 10^{-3}}{7,5 \cdot 10^{-3}} = 0,433 \cdot 10^{-3}$$