Zadatak III.3.1.

$R = 1k\Omega;\ C = 2\mu F;\ U = 6V$

a) $t = 0;\ i(0), u_c(0), u_R(0) = ?$

$$i(0) = \frac{U}{R} = \frac{6}{1000} = 6mA$$

$u_c(0) = 0V$

$u_R(0) = U = 6V$

b) $\tau = ?$

$$\tau = R \cdot C \cdot 1000 \cdot 2 \cdot 10^{-6} = 2ms$$

c) $t = 5\tau = 10ms;\ u_c(t), u_R(t), i(t) = ?$

$$u_c(t) = U\left(1 - e^{-\frac{t}{\tau}}\right) = 6 \cdot (1 - e^{-5}) = 5,96V$$

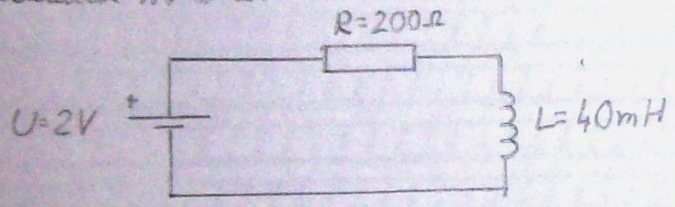
$$i(t) = \frac{U}{R} e^{-\frac{t}{\tau}} = \frac{6}{1000} \cdot e^{-5} = 0,04mA$$

$$u_R(t) = i(t) \cdot R = 0,04 \cdot 10^{-3} \cdot 1000 = 0,04V$$

d) $W_c = ?$

$$W_c = \frac{CU^2}{2} = \frac{2 \cdot 10^{-6} \cdot 6^2}{2} = 36 \cdot 10^{-6} J$$

Zadatak III.3.2.



a) $\tau = ?$

$$\tau = \frac{L}{R} = \frac{40 \cdot 10^{-3}}{200} = 0,2ms$$

b) $t = 0;\ i(0), u_L(0), u_R(0) = ?$

$i(0) = 0A$

$u_L(0) = U = 2V$

$u_R(0) = 0V$

c) $i_{st}, u_{R_{st}}, u_{L_{st}} = ?$

$$i_{st} = \frac{U}{R} = \frac{2}{200} = 10mA$$

$$u_{R_{st}} = i_{st} \cdot R = 10mA \cdot 200 = 2V$$

$u_{L_{st}} = 0V$

d) $W_L = ?$ u stacionarnom stanju

$$W_L = \frac{L \cdot I^2}{2} = \frac{40 \cdot 10^{-3} \cdot (10 \cdot 10^{-3})^2}{2} = 2 \cdot 10^{-6} J$$