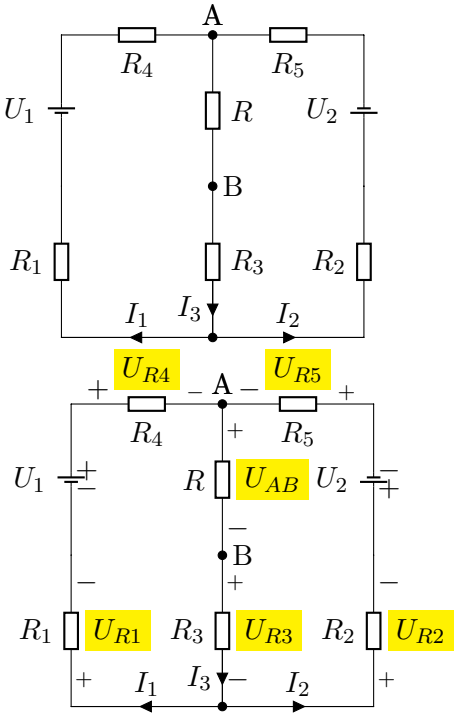
Tema:
Zadatak

Nastavni sat predmeta *Osnove elektrotehnike*, listopad 2017.



$U_1 = 31\,\mathrm{V}$ $\quad R_3 = 4\,\Omega$
$U_2 = 4\,\mathrm{V}$ $\quad R_4 = 7\,\Omega$
$R_1 = 3\,\Omega$ $\quad R_5 = 14\,\Omega$
$R_2 = 6\,\Omega$ $\quad U_{AB} = 6\,\mathrm{V}$

$R = ?$

K1K2b.1

$$I_3 = I_1 + I_2 \qquad (1)$$
$$U_{R1} - U_1 + U_{R4} + U_{AB} + U_{R3} = 0 \qquad (2)$$
$$U_{R2} + U_2 + U_{R5} + U_{AB} + U_{R3} = 0 \qquad (3)$$

$$U_{R1} = I_1 R_1, U_{R2} = I_2 R_2, U_{R3} = I_3 R_3, U_{R4} = I_1 R_4, U_{R5} = I_2 R_5$$

$$I_1 + I_2 - I3 = 0 \qquad (1)$$
$$I_1 R_1 + I_1 R_4 + I_3 R_3 = U_1 - U_{AB} \qquad (2)$$
$$I_2 R_2 + I_2 R_5 + I_3 R_3 = -U_2 - U_{AB} \qquad (3)$$

K1K2b.2

$$\begin{aligned} I_1 &+ I_2 &- I_3 &= 0 \qquad (1)\\ I_1(3+7) & & + I_3 \cdot 4 &= 31 - 6 \qquad (2)\\ & I_2(6+14) & + I_3 \cdot 4 &= -4 - 6 \qquad (3) \end{aligned}$$

$$\begin{aligned} I_1 &+ I_2 &- I_3 &= 0 \qquad (1)\\ 10 I_1 & & + 4 I_3 &= 25 \qquad (2)\\ & 20 I_2 & + 4 I_3 &= -10 \qquad (3) \end{aligned}$$

Rješenje sustava: $I_1 = 2\,\mathrm{A}, \quad I_2 = -0{,}75\,\mathrm{A}, \quad I_3 = 1{,}25\,\mathrm{A}$

$$R = \frac{U_{AB}}{I_3} = \frac{6}{1{,}25} = 4{,}8\,\Omega$$

K1K2b.3