

PRETVORBA SPOJA OTPORA U TROKUTU, U SPOJ ZVIJEZDA

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Zadatak: 1.

$$R_1 = 2 (\Omega)$$

$$R_2 = 4 (\Omega)$$

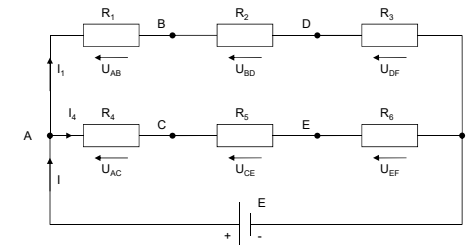
$$R_3 = 3 (\Omega)$$

$$R_4 = 10 (\Omega)$$

$$R_5 = 5 (\Omega)$$

$$R_6 = 3 (\Omega)$$

$$E = 12 (\Omega)$$

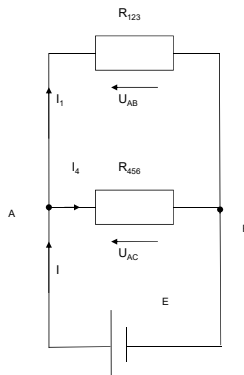


Odredi napone između točaka BC, DE, DC te BE

- $R_{123} = R_1 + R_2 + R_3 = 2+4+3 = 9 (\Omega)$

- $R_{456} = R_4 + R_5 + R_6 = 10+5+3 = 18 (\Omega)$

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$$R = \frac{R_{123} \times R_{456}}{R_{123} + R_{456}} = \frac{9 \times 18}{9 + 18} = \frac{162}{27} = 6 \Omega$$

$$I_1 = \frac{U_2}{R_2} = \frac{12}{4} = 3 A$$

$$U_{AF} = I_1 \times R_{123} = 3 \times 9 = 27 V$$

$$I_4 = \frac{U_{AF}}{R_{456}} = \frac{27}{18} = 1,5 V$$

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$$U_{AB} = I_1 \times R_1 = 3 \times 2 = 6 V$$

$$U_{BD} = I_1 \times R_2 = 3 \times 4 = 12 V$$

$$U_{DF} = I_1 \times R_3 = 3 \times 3 = 9 V$$

$$U_{AC} = I_4 \times R_4 = 1,5 \times 10 = 15 V$$

$$U_{CE} = I_4 \times R_5 = 1,5 \times 5 = 7,5 V$$

$$U_{EF} = I_4 \times R_6 = 1,5 \times 3 = 4,5 V$$

$$U_{BC} = U_{AC} - U_{AB} = 15 - 6 = 9 V$$

$$U_{DE} = U_{DF} - U_{EF} = 9 - 4,5 = 4,5 V$$

$$U_{BE} = U_{AC} + U_{CE} - U_{AB} = 15 + 7,5 - 6 = 16,5 V$$

$$U_{DC} = U_{EF} - U_{BD} - U_{DF} = 4,5 - 12 - 9 = -16,5 V$$

4

PRIMJER 2:

$R_1 = 1 (\Omega)$
 $R_2 = 2 (\Omega)$
 $R_3 = 3 (\Omega)$
 $R_4 = 4 (\Omega)$
 $R_5 = 5 (\Omega)$

Odredi ukupni otpor spoja.

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PRETVORBA SPOJA OTPORA – TROKUT U ZVIJEZDU

$$R_{12} = \frac{R_1 \times R_2}{R_1 + R_2 + R_3}$$

$$R_{23} = \frac{R_2 \times R_3}{R_1 + R_2 + R_3}$$

$$R_{13} = \frac{R_1 \times R_3}{R_1 + R_2 + R_3}$$

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Primjer: 2. (nastavak)

$$R_{12} = \frac{R_1 \times R_2}{R_1 + R_2 + R_3} = \frac{1 \times 2}{1 + 2 + 3} = \frac{2}{6} = 0,33\Omega$$

$$R_{13} = \frac{R_1 \times R_3}{R_1 + R_2 + R_3} = \frac{1 \times 3}{1 + 2 + 3} = \frac{3}{6} = 0,5\Omega$$

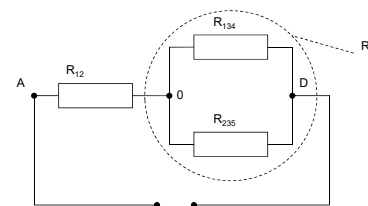
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$$R_{23} = \frac{R_2 \times R_3}{R_1 + R_2 + R_3} = \frac{2 \times 3}{1 + 2 + 3} = \frac{6}{6} = 1\Omega$$

$$R_{134} = R_{12} + R_4 = 0,5 + 4 = 4,5\Omega$$

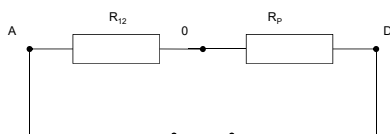
$$R_{235} = R_{23} + R_5 = 1 + 5 = 6\Omega$$

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$$R_p = \frac{R_{134} \times R_{235}}{R_{134} + R_{235}} = \frac{4,5 \times 6}{4,5 + 6} = \frac{27}{10,5} = 2,57\Omega$$

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$$R = R_{12} + R_p = 0,33 + 2,57 = 2,9\Omega$$

Primjer 3. ZZ br.

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