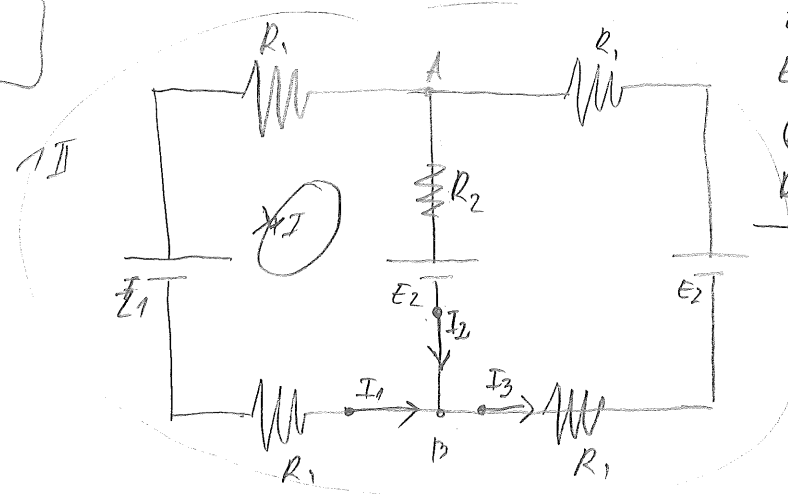


96-3



$E_1 = 2.0 \text{ V}$
 $E_2 = 6.13 \text{ V}$
 $R_1 = 1.7 \text{ k}\Omega = 1700 \Omega$
 $R_2 = 3.5 \text{ k}\Omega = 3500 \Omega$

$U_{AB} = E_2 + I_2 \cdot R_2$, $I_2 = ?$
 $U_{AB} = ?$
 $U_{AB} = 6.13 \text{ V} - 0.0004 \cdot 3500 = 6.13 \text{ V} - 1.4 = 4.73 \text{ V}$

$M_C = 2$
 $M_g = 3$

(1) $I_3 = I_1 + I_2$

(I) $I_1 R_1 - E_2 - I_2 R_2 + I_1 R_1 + E_1 = 0$

(II) $I_1 R_1 + I_3 R_1 - E_2 + I_3 R_1 + I_1 R_1 - E_1 = 0$

(I) $2I_1 R_1 - I_2 R_2 = E_2 - E_1$

(II) $2I_1 R_1 + 2I_3 R_1 = E_2 - E_1$

(I) $2I_1 R_1 - I_2 R_2 = 4.12$

II $2I_1 R_1 + 2I_1 R_1 + 2I_2 R_1 = 4.12$

$10400 I_2 = -4.12$

$I_2 = \frac{-4.12 \text{ V}}{10400 \Omega}$

$I_2 = -0.0004 \text{ A}$

(I) $3400 I_1 - 3500 I_2 = 4.12 \quad | \cdot 2$

$6800 I_1 + 3400 I_2 = 4.12$

$-6800 I_1 + 7000 I_2 = -8.14$

$6800 I_1 + 3400 I_2 = 4.12$

$10400 I_2 = -4.12$
 $I_2 = -0.0004$

50.2

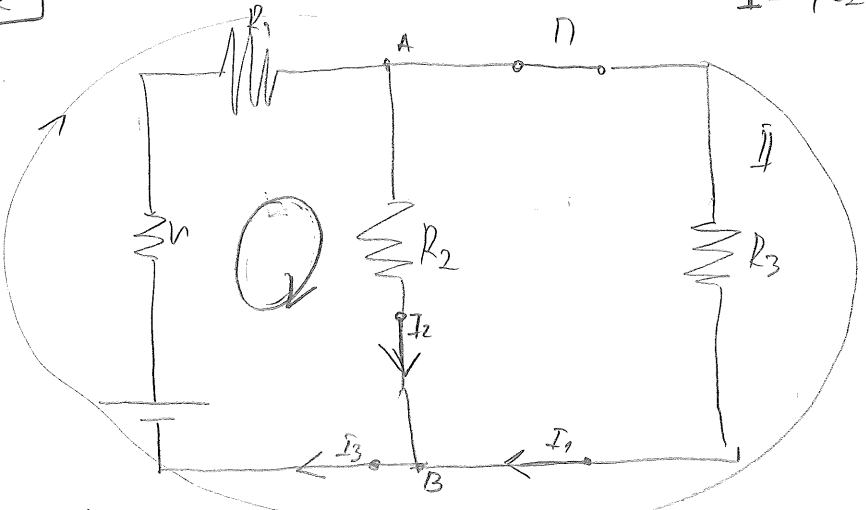
1° П је затворен

$I = 0,025 \text{ A}$

$R_2 = R_3 = 100 \Omega$
 $v = 50 \text{ V}$

2° П је отворен

$I = 0,020 \text{ A}$



$M_c = 2$
 $M_g = 3$

- (I) $I_3 = I_1 + I_2$, $I_1 = I_3 - I_2$
- (I) $I_3 \cdot v + I_3 \cdot R_1 + I_2 \cdot R_2 - E = 0$
- (II) $I_3 \cdot v + I_3 \cdot R_1 + I_1 \cdot R_3 - E = 0$

$R_1 = 100 \Omega$

$I_3(v + R_1) + I_2 \cdot R_2 = E$
 $I_3(v + R_1) + I_3 R_2 - I_2 R_2 = E$

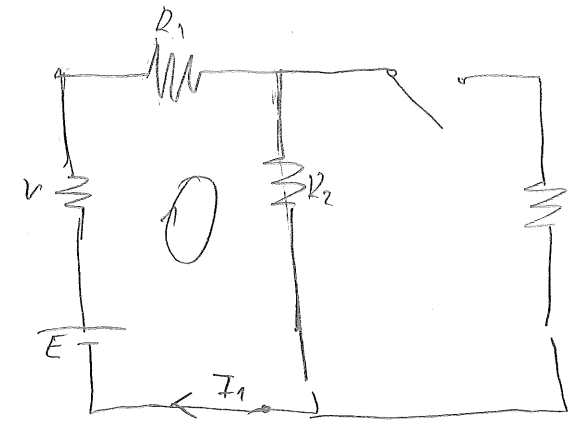
$2500 + 25 \cdot 100 = 1000 E$
 $5000 = 1000 E$
 $E = 5 \text{ V}$

$I_3(v + R_1) + I_2 \cdot R_2 = E$
 $I_3(v + R_1 + R_2) - I_2 \cdot R_2 = E$

$I_3(50 + R_1) = E$
 $I_3(150 + R_1) = E$

$100 \cdot 0,025 + 0,025 R_1 = E$
 $2,5 + 0,025 R_1 = E$

$200 I_3 + 2 R_1 I_3 = 2E \quad | :2$
 $100 \cdot I_3 + I_3 R_1 = E$



$I_1 \cdot v + I_1 \cdot R_1 + I_1 \cdot R_2 = E$
 $I_1(v + R_1 + R_2) = E$
 $0,020(150 + R_1) = E$
 $3 + 0,02 R_1 = E$

$2,5 + 0,025 R_1 = E \cdot 1000$
 $3 + 0,020 R_1 = E \cdot 1000$

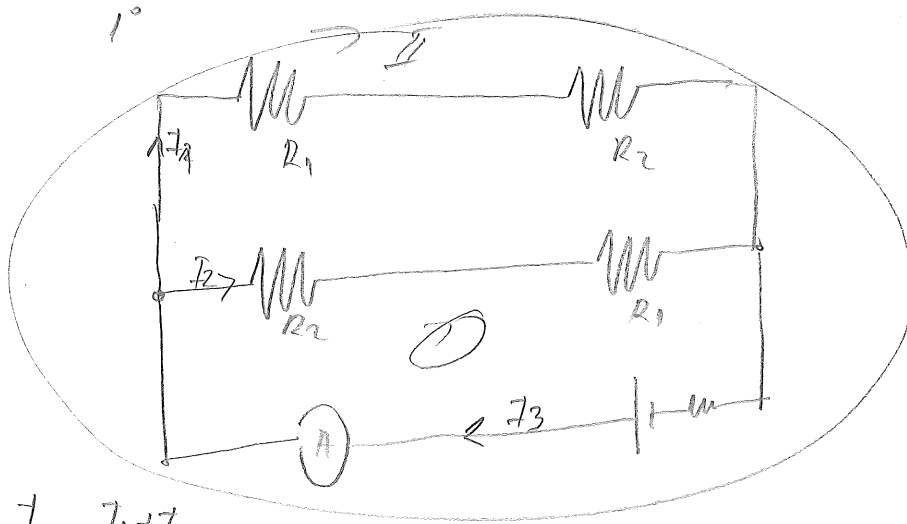
$2500 + 25 R_1 = 1000 E$
 $3000 + 20 R_1 = 1000 E \quad | -$

$2500 + 25 R_1 = 1000 E$
 $-3000 - 20 R_1 = -1000 E \quad | +$

$5 R_1 - 500 = 0$
 $5 R_1 = 500$
 $R_1 = 100$

4.6

$I_3 = 0,4 \text{ A}$
 $U = 10 \text{ V}$
 $E = 12 \text{ V}$



$I_3 = I_1 + I_2$

(I) $I_2 R_2 + I_2 R_1 + I_3 \cdot U = E$

(II) $I_1 R_1 + I_1 R_2 + I_3 \cdot U = E$

$I_2 (R_1 + R_2) = 12 - 4 = 8$

$I_1 (R_1 + R_2) = 12 - 4 = 8$

$I_1 = I_2 = \frac{0,4}{2} = 0,2$

$R_1 + R_2 = \frac{8}{0,2}$

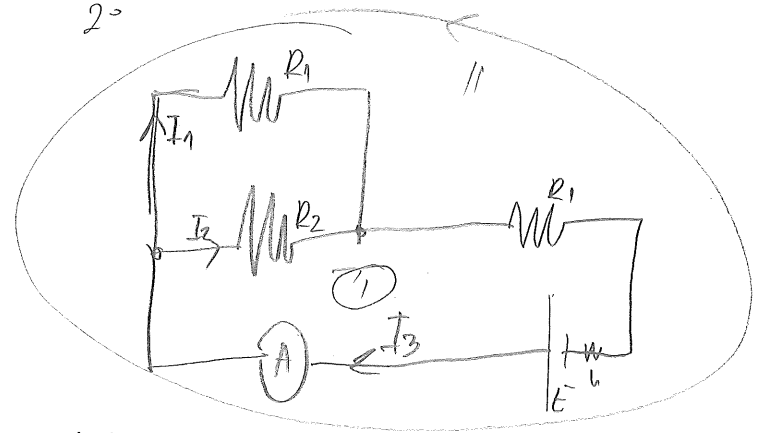
$R_1 + R_2 = 40$

$R_1 = R_2$

$R_1 = R_2 = 20 \text{ } \Omega$

$M \ddot{a} = 2$
 $u_g = 2$

2°



$M \ddot{a} = 2$
 $u_g = 3$

$I_3 = I_1 + I_2$

$I_1 = I_2$

(I) $I_2 R_2 + I_3 R_1 + I_3 \cdot u - E = 0$

(II) $-I_1 R_1 + E - I_3 \cdot u - I_3 R_1 = 0$

(I) $I_2 R_2 + I_3 R_1 = 12 - 3 = 9$

$-I_1 R_1 - I_3 R_1 = -12 + 3 = -9 \quad | \cdot -1$

$I_2 R_2 + I_3 R_1 = 9$

$I_1 R_1 + I_3 R_1 = 9$

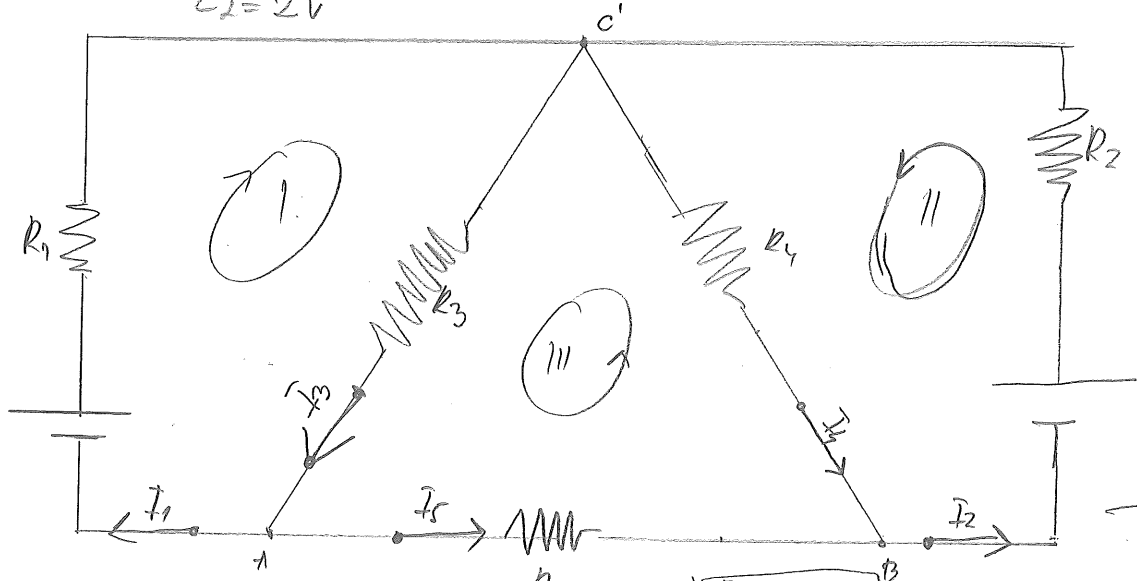
$I_1 R_2 = I_2 R_1$

$I_1 = I_2$

$R_1 = R_2$

4.18

$E_1 = 4V$
 $E_2 = 2V$
 $R_1 = R_2 = R_3 = R_4 = R_5 = 1\Omega$



$u_c = 3$
 $u_g = 5$

loop c' $I_1 + I_2 = I_3 + I_4$
 loop A $I_3 = I_1 + I_5$

I_1, I_2, I_3
 $I_4 = I_1 + I_2 - I_3$
 $I_5 = I_3 - I_1$

(I) $R_1 I_1 + R_3 I_3 = E_1$ $-2 + \frac{10}{4} = -\frac{8}{4} + \frac{10}{4} =$
 (II) $R_4 I_4 + R_2 I_2 = E_2$ $-\frac{2}{4} = -\frac{1}{2}$
 (III) $I_5 R_5 - I_4 R_4 + I_3 R_3 = 0$

$I_1 R_1 + I_3 R_3 = E_1$
 $I_1 R_4 + I_2 R_4 - I_3 R_4 + I_2 R_2 = E_2$
 $-I_1 R_4 - I_2 R_4 + I_3 R_4 + I_3 R_3 + I_3 R_5 - I_1 R_5 = 0$

$I_1 R_1 + I_3 R_3 = 4$ $\frac{14}{4} + \frac{2}{4} = \frac{16}{4} = 4$
 $I_1 R_4 + I_2(R_4 + R_2) - I_3 R_4 = 2$ $\frac{14}{4} - \frac{10}{4} = \frac{4}{4} = 1$
 $-I_1(R_4 + R_5) - I_2 R_4 + I_3(R_4 + R_3 + R_5) = 0$

$x + z = 4$
 $x + 2y - z = 2$
 $-2x - y + 3z = 0$

$2y - z = 2$
 $3y + z = 4$
 $-2y + 2z = -2$

$$\begin{bmatrix} 1 & 0 & 1 \\ 1 & 2 & -1 \\ -2 & -1 & 3 \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix} = \begin{bmatrix} 4 \\ 2 \\ 0 \end{bmatrix}$$

$$\begin{matrix} I_1 = x \\ I_2 = y \\ I_3 = z \end{matrix}$$

$x + 2y - z = 2$
 $-2x - y + 3z = 0$
 $x + z = 0$

$x + 2y - z = 2$
 $3y + z = 4$
 $-2y + 2z = -2$

$-8y = -10$
 $y = \frac{10}{8} = \frac{5}{4}$
 $z = -\frac{1}{2}$
 $x = \frac{9}{4}$

$I_1 = \frac{9}{4} A$
 $I_2 = \frac{5}{4} A$
 $I_3 = -\frac{1}{2} A$
 $I_4 = \frac{3}{4} A$
 $I_5 = \frac{7}{4} A$