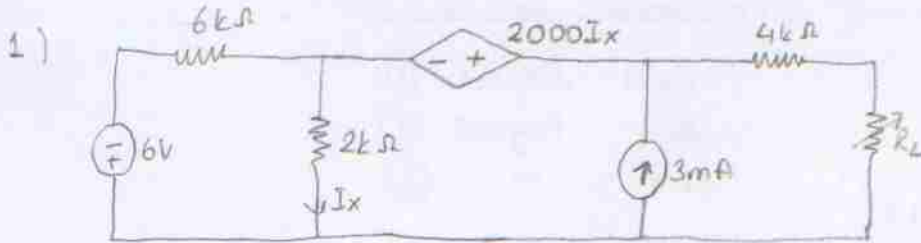


Ad Soyad:

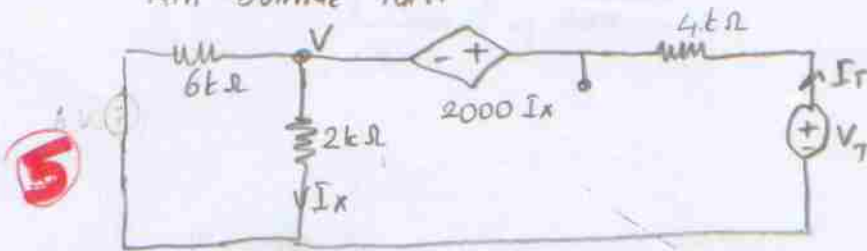
Numara:

Kısa Sınav III



R_L direncine maksimum güç aktarılması için R_L direncinin değeri ne olmalıdır. R_L 'de harcanan güç bulunuz.

Rth bulmak için



$$I_x = \frac{V}{2000}$$

$$I_T = \frac{V_T - (2000 I_x + V)}{4 \cdot 10^3} = \frac{V_T - (2V)}{4 \cdot 10^3}$$

$$\frac{V}{6 \cdot 10^3} + \frac{V}{2 \cdot 10^3} - I_T = 0$$

(10) $\frac{4V}{6 \cdot 10^3} = I_T \quad V = \frac{6 \cdot 10^3}{4} \cdot I_T$

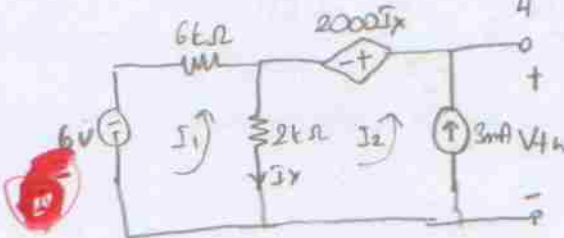
$$I_T = \frac{V_T}{4 \cdot 10^3} - \frac{2V}{4 \cdot 10^3} = \frac{V_T}{4 \cdot 10^3} - \frac{12 \cdot 10^3}{16 \cdot 10^3} I_T$$

$$I_T + \frac{12 \cdot 10^3}{16 \cdot 10^3} I_T = \frac{V_T}{4 \cdot 10^3}$$

$$\frac{7 I_T}{4} = \frac{V_T}{4 \cdot 10^3}$$

$$\frac{V_T}{I_T} = 7k\Omega = R_{th} = R_L$$

(10)



$$I_2 = 3mA$$

$$8 \cdot 10^3 I_1 - 2 \cdot 10^3 I_2 - 6 = 0$$

$$8 \cdot 10^3 I_1 - 6 - 6 = 0$$

$$I_1 = \frac{12}{8 \cdot 10^3} = \frac{3}{2} mA$$

$$I_x = I_2 - I_1$$

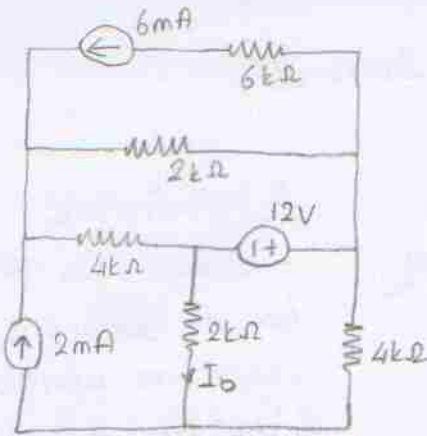
$$I_x = \frac{3}{2} mA$$

$$-V_{th} + 2000 I_x + 2 \cdot 10^3 I_x = 0$$

$$V_{th} = 4000 I_x = 6V$$

(10) $P_R = \left(\frac{6}{16 \cdot 10^3} \right)^2 \cdot 7 \cdot 10^3 = \frac{9}{64} \cdot 10^{-3} = \frac{9}{64} mW$

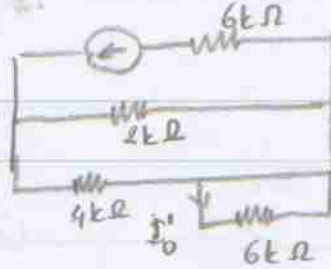
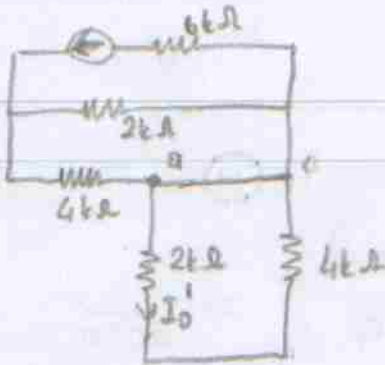
2)



I_0 akımını süper pozisyon teoremini kullanarak hesaplayınız

6mA Kaynak ①
2mA Kaynak ②
12V " ③

①

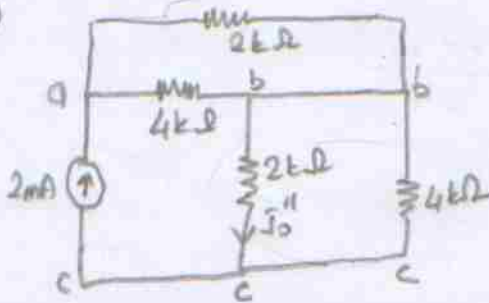


kısa devreden dolayı

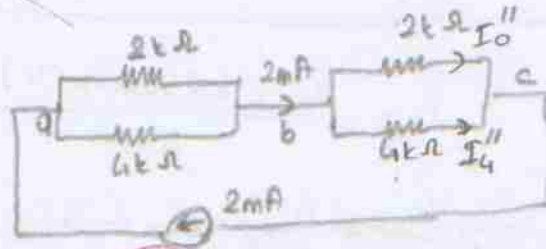
$$I'_0 = 0 \text{ A}$$

15

②



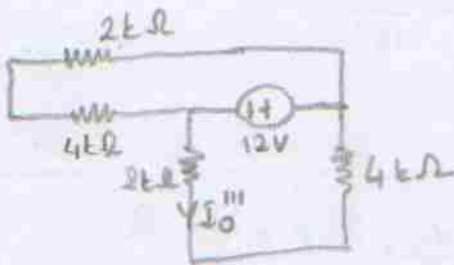
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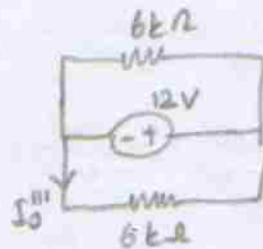
15

$$\begin{aligned} I''_0 + I_4 &= 2 \cdot 10^{-3} & 2 \cdot 10^3 I_0 &= 4 \cdot 10^3 I_4 \\ 1,5 I''_0 &= 2 \cdot 10^{-3} & I''_0 &= 2 I_4 \\ I''_0 &= \frac{20}{15} \cdot 10^{-3} & I_4 &= 0,5 I''_0 \\ I''_0 &= \frac{4}{3} \text{ mA} \end{aligned}$$

③



=



$$I'''_0 \cdot 6 \cdot 10^3 = -12$$

$$I'''_0 = -2 \text{ mA}$$

15

$$I_0 = I'_0 + I''_0 + I'''_0 = \left(0 + \frac{4}{3} - 2 \right) \cdot 10^{-3} = -\frac{2}{3} \text{ mA}$$

5