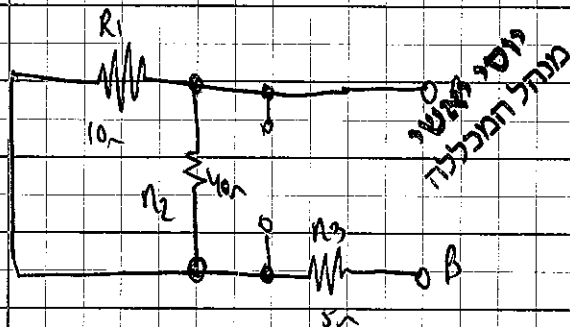


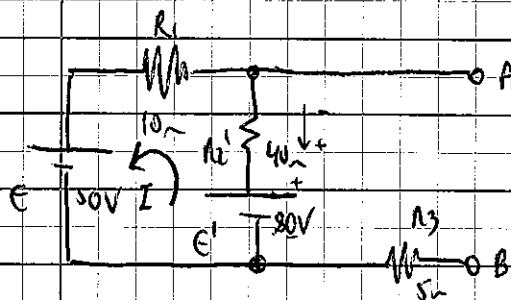
1. נדרש



! $(R_{TH}) R_{AB}$ נדרש (K)

$$R_{AB} = (R_1 \parallel R_2) + R_3$$

$$R_{AB} = 10 \parallel 40 + 5 = 13 \Omega$$



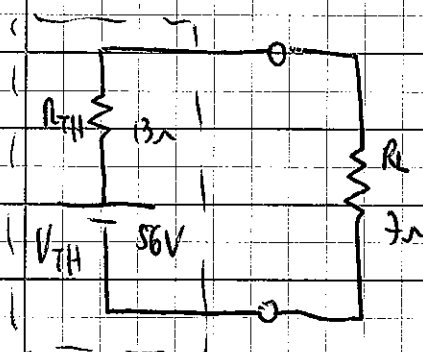
! $(V_{TH}) V_{AB}$ נדרש

$$E' = I_s \cdot R_2 = 2 \cdot 40 = 80V$$

$$I = \frac{E' - E}{R_1 + R_2} = \frac{30}{50} = 0.6A$$

$$V_{AB} = -V_{R_2} + E' = -R_2 \cdot I + E' = -40 \cdot 0.6 + 80 = 56V$$

$$V_{TH} = 56V$$



! נדרש

$$I_{R_L} = \frac{V_{TH}}{R_{TH} + R_L} = \frac{56}{20} = 2.8A$$

$$I_{R_L} = I_{R_3} = 2.8A$$

$$V_{R_{L,3}} = I_{R_{L,3}} \cdot (R_L + R_3) = 2.8 \cdot (5 + 7) = 33.6V$$

(?)

$$V_{R1} = V_{R2} = 33.6 \text{ V}$$

$$P_{R2} = \frac{V_{R2}^2}{R2} = \frac{33.6^2}{40} = 28.224 \text{ [W]}$$

$$P_{R1 \max} | R_L = R_{TH} = 13 \text{ (W)}$$

יחס יחסי
מנהל המכללה

.1 (1)

$$P_{R1 \max} = \frac{V_{R1}^2}{R_L} = \frac{(V_{TH}/2)^2}{R_L} = \frac{(56/2)^2}{40}$$

.2

$$P_{R1 \max} = 112 \text{ (W)}$$

2.1 (1)

$$X_C = \frac{1}{\omega C} = \frac{1}{2\pi \cdot 50 \cdot 21.2 \cdot 10^{-6}} = 150.146 \Omega$$

(1)

$$X_L = \omega L = 2\pi \cdot 50 \cdot 0.191 = 60 \Omega$$

$$\bar{Z}_{AB} = \left(\frac{1}{R_1 + jX_L} + \frac{1}{R_2 - jX_C} \right)^{-1}$$

$$\bar{Z}_{AB} = \left(\frac{1}{80 + j60} + \frac{1}{260 - j150.146} \right)^{-1} = (19.3 - j31.579) \Omega = 85.356 \angle 21.713^\circ \Omega$$

! נכנסת, נכנסת, נכנסת

$$\bar{I}_1 = \frac{\bar{U}}{R_1 + jX_L} = \frac{120 \angle 0}{80 + j60} = 1.2 \angle -36.869^\circ \text{ (A)}$$

(2)

$$\bar{I}_2 = \frac{\bar{U}}{R_2 - jX_C} = \frac{120 \angle 0}{260 - j150.146} = 0.4 \angle 30^\circ \text{ (A)}$$

$$\bar{I}_T = \bar{I}_1 + \bar{I}_2 = 1.2 \angle -36.869^\circ + 0.4 \angle 30^\circ = 1.405 \angle -21.712^\circ \text{ (A)}$$

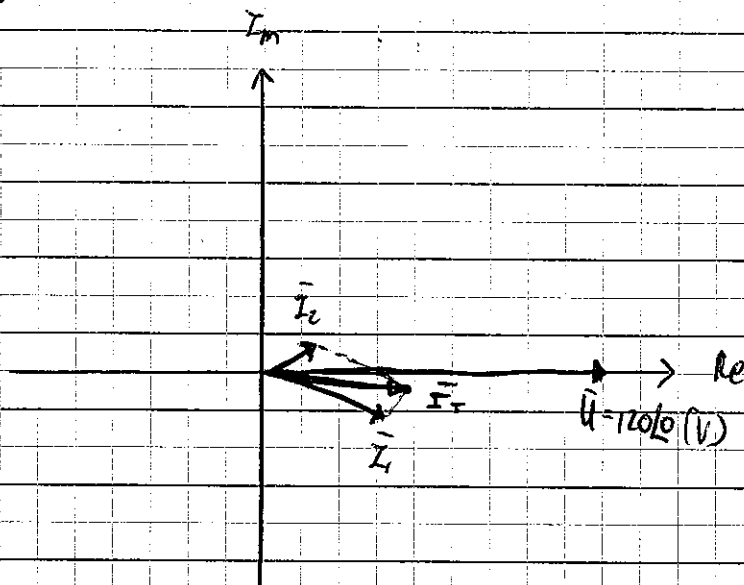
$$\vec{U}_{ED} = +\vec{V}_{R1} - \vec{U}_{R2}$$

$$\vec{U}_{ED} = R_1 \cdot \vec{I}_1 - R_2 \cdot \vec{I}_2$$

$$\vec{U}_{ED} = 80 \cdot 1,2 \angle -36,869^\circ - 0,4 \angle 30^\circ \cdot 260$$

$$\vec{U}_{ED} = 110,398 \angle -96,901^\circ \text{ (V)}$$

מסלול המסלול
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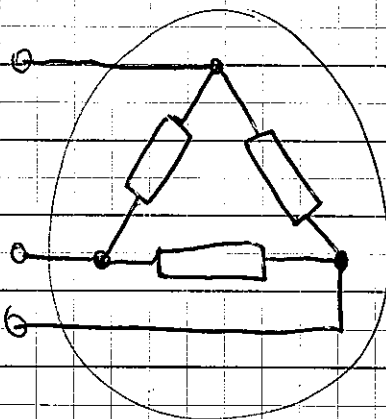


(3)

3 $\sqrt{3}$

$$U_L = V_{PH}$$

$$Z_L = \sqrt{3} \cdot I_{PH}$$



1 (N'0,1) (N'0,1) (N'0,1) (K)

$$P_T = 75 \text{ kW}$$

$$U_n = 1000 \text{ V}$$

$$\cos \phi = 0,85 \text{ (מקביל)}$$

$$P_T = \sqrt{3} (Z_L) (U_L) \cdot \cos \phi$$

$$|\vec{I}_L| = \frac{P_T}{\sqrt{3} \cdot U_L \cdot \cos \phi} = \frac{75 \cdot 10^3}{\sqrt{3} \cdot 1000 \cdot 0,85} = 50,942 \text{ A}$$

$$|\bar{I}_L| = \sqrt{3} |\bar{I}_{PH}|$$

$$|\bar{I}_{PH}| = \frac{|\bar{I}_L|}{\sqrt{3}} = \frac{50.942}{\sqrt{3}} = 29.411 \text{ (A)}$$

$$R_L = \frac{l \cdot l}{A}$$

יחס יחסי
במרחל המכללה

$$\Delta P = |\bar{I}_L|^2 \cdot R_L$$

$$R_L = \frac{\Delta P}{|\bar{I}_L|^2} = \frac{3000}{50.942^2} = 1.156 \text{ (}\Omega\text{)}$$

$$A = \frac{l \cdot l}{R_L} = \frac{0.018 \cdot 1000}{1.156} = 15.5 \text{ (mm}^2\text{)}$$

$$|\bar{I}_{L\Delta}| = 3 |\bar{I}_{L\lambda}|$$

נדרש זרם של 3 (A) : זרם זרם

$$|\bar{I}_{L\lambda}| = \frac{|\bar{I}_{L\Delta}|}{3} = \frac{50.942}{3} = 16.98 \text{ (A)}$$

4 אב

$$\bar{Z}_{AB} = ((R_1 + jX_{L2}) || (R_2 - jX_{C1})) + jX_{L1}$$

$$\bar{Z}_{AB} = \left[\left(\frac{1}{3+j4} + \frac{1}{5-j10} \right)^{-1} \right] + j5$$

$$\bar{Z}_{AB} = (5+j7.5) \text{ (}\Omega\text{)} = 9.013 / 56.309^\circ \text{ (}\Omega\text{)}$$

! איך המעגל הולכת כי נוסח העצום חזונו

$$\bar{U}_{Z_1} = \bar{I}_1 \cdot (R_1 + jX_{L_1})$$

(7)

$$\bar{U}_{Z_1} = 3 \angle 20^\circ \cdot (3 + j4) = 15 \angle 73.13^\circ \text{ (V)}$$

$$\bar{U}_{Z_1} = \bar{U}_{Z_2} = 15 \angle 73.13^\circ \text{ V}$$

החלפת
המקורות
המקבילים

$$\bar{I}_{Z_2} = \frac{\bar{U}_{Z_2}}{Z_2} = \frac{15 \angle 73.13^\circ}{(5 - j10)} = 1.341 \angle 136.565^\circ \text{ A}$$

$$\bar{I}_T = \bar{I}_1 + \bar{I}_2 = 3 \angle 20^\circ + 1.341 \angle 136.565^\circ = 2.683 \angle 46.565^\circ \text{ A}$$

$$\bar{U}_S = \bar{I}_T \cdot Z_{AB} = 2.683 \angle 46.565^\circ \cdot 9.013 \angle 56.309^\circ$$

$$\bar{U}_S = 24.184 \angle 102.874^\circ \text{ (V)}$$

