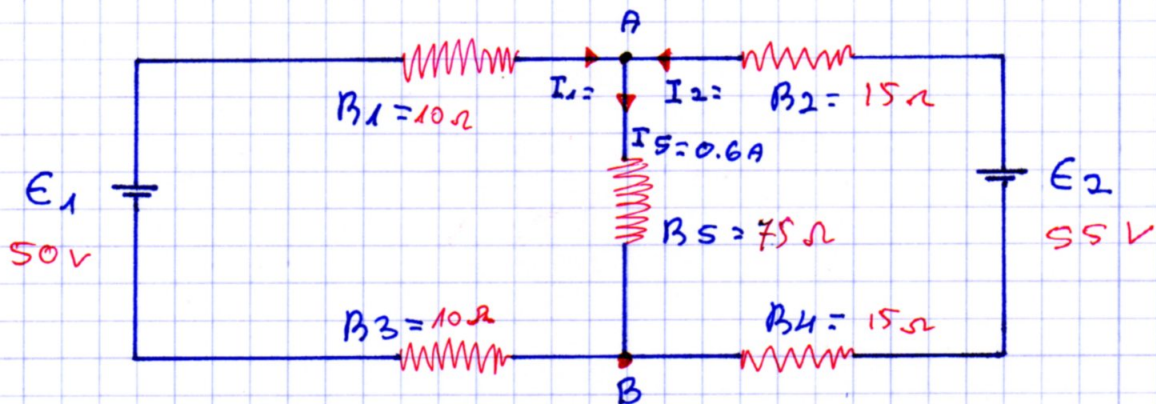


(2008) 3 מ"מ (אביב)



10

$$U_{BS} = U_{AB} = R_5 \cdot I_5 = 75 \cdot 0.6 = 45V$$

$$I_1 = \frac{U_{AB} - E_1}{R_1 + R_3} = \frac{50 - 45}{20} = 0.25A$$

$$I_2 = I_5 - I_1 = 0.6 - 0.25 = 0.35A$$

$$U_{AB} = \frac{\frac{E_1}{R_1 + R_3} + \frac{E_2}{R_2 + R_4}}{\frac{1}{R_1 + R_3} + \frac{1}{R_5} + \frac{1}{R_2 + R_4}} = \frac{\frac{50}{20} + \frac{55}{30}}{\frac{1}{20} + \frac{1}{75} + \frac{1}{30}} = 45V$$

$E_2 = 55.5V$ solve triple junction method

2) Note "5V" - voltage at E_2 - voltage across R_5

$$E_2 = +U_{AB} + I_2 \cdot R_{2,4} = 45 + 0.35 \cdot 30 = 55.5V$$

11

$$P_{E1} = E_1 \cdot I_1 = 50 \cdot 0.25 = 12.5W$$

$$P_{E2} = E_2 \cdot I_2 = 55.5 \cdot 0.35 = 19.425W \quad + \Rightarrow 31.92W$$

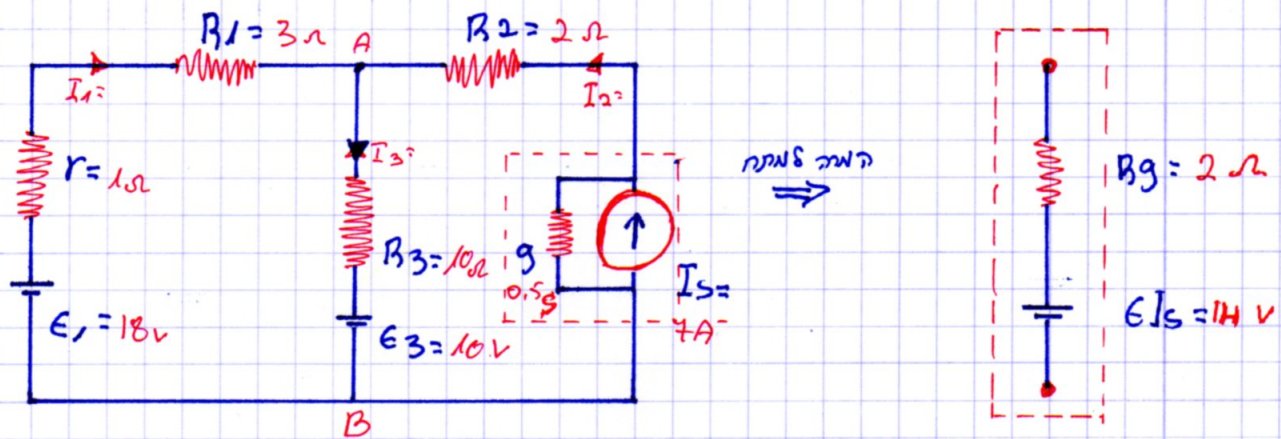
$$P_{R5} = U_{AB} \cdot I_{R5} = 45 \cdot 0.6 = 27W$$

12

$$\eta = \frac{P_{RL}}{P_{E1,2}} = \frac{27}{31.92} = 84.586\%$$

(1)

(2004 ב.ב.כ) / 1000



1c

$$U_{ab} = \frac{E_1}{R_1 + r} + \frac{E_3}{R_3} + \frac{E_{Is}}{R_g + R_2} = \frac{18}{4} + \frac{10}{10} + \frac{14}{4} = \frac{9}{0.6}$$

$$U_{ab} = 15V$$

$$I_1 = \frac{E_1 - U_{ab}}{R_1 + r} = \frac{18 - 15}{4} = 0.75A$$

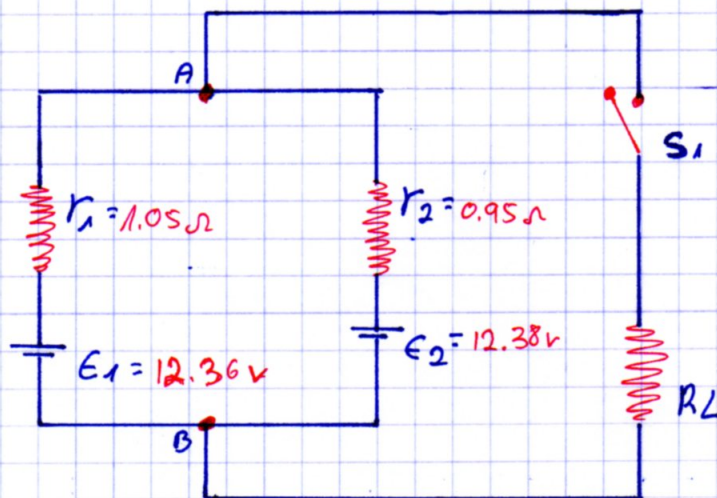
$$I_2 = \frac{U_{ab} - E_{Is}}{R_g + R_2} = \frac{15 - 14}{4} = -0.25A \quad (-) \text{ נגד ציון}$$

2

$$I_3 = \frac{U_{ab} - E_3}{R_3} = \frac{15 - 10}{10} = 0.5A$$

$$E_3 = 10V$$

6 שאלה (2003)



1c)

רצות S1 נעולה

$$U_{ab} = \frac{\frac{E_1}{r_1} + \frac{E_2}{r_2}}{r_1^{-1} + r_2^{-1}} = \frac{\frac{12.36}{1.05} + \frac{12.38}{0.95}}{1.05^{-1} + 0.95^{-1}} = \frac{24.803}{2.005} =$$

$$U_{ab} - S_1 \text{ open} = 12.37 \text{ V}$$

2)

רצות S1 פתוחה

$$U_{ab} = \frac{\frac{E_1}{r_1} + \frac{E_2}{r_2}}{r_1^{-1} + r_2^{-1} + R_L^{-1}} = \frac{\frac{12.36}{1.05} + \frac{12.38}{0.95}}{1.05^{-1} + 0.95^{-1} + 50^{-1}} = \frac{24.803}{2.025} =$$

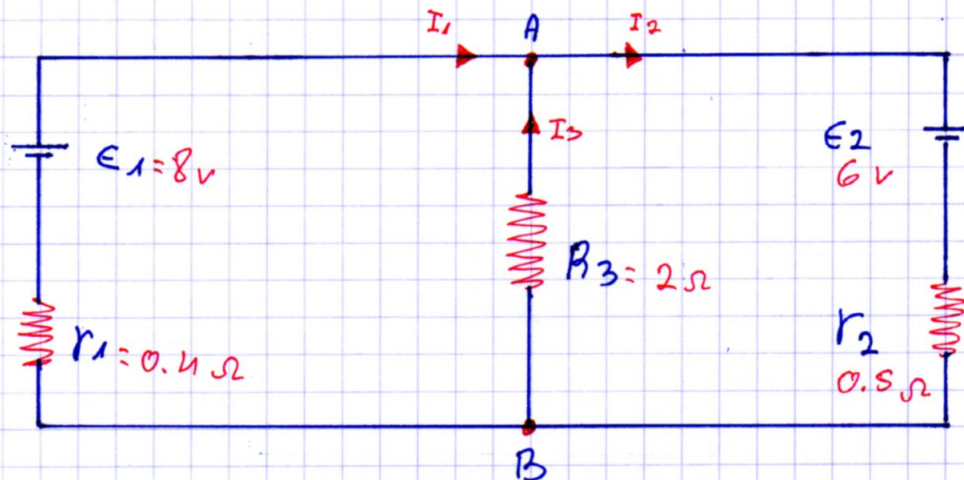
$$U_{ab} - S_1 \text{ closed} = 12.248 \text{ V}$$

$$I_1 = \frac{E_1 - U_{ab}}{r_1} = \frac{12.36 - 12.248}{1.05} = 0.106 \text{ A}$$

$$I_2 = \frac{E_2 - U_{ab}}{r_2} = \frac{12.38 - 12.248}{0.95} = 0.138 \text{ A}$$

(3)

תרגיל 1 (אביב 2005)



$$\textcircled{1c} \quad U_{ab} = \frac{\frac{E_1}{r_1} + \frac{E_2}{r_2}}{r_1^{-1} + r_2^{-1} + R_3^{-1}} = \frac{\frac{8}{0.4} + \frac{6}{0.5}}{0.4^{-1} + 0.5^{-1} + 2^{-1}} = \frac{32}{5}$$

$$U_{ab} = 6.4 \text{ V}$$

$$I_1 = \frac{E_1 - U_{ab}}{r_1} = \frac{8 - 6.4}{0.4} = 4 \text{ A}$$

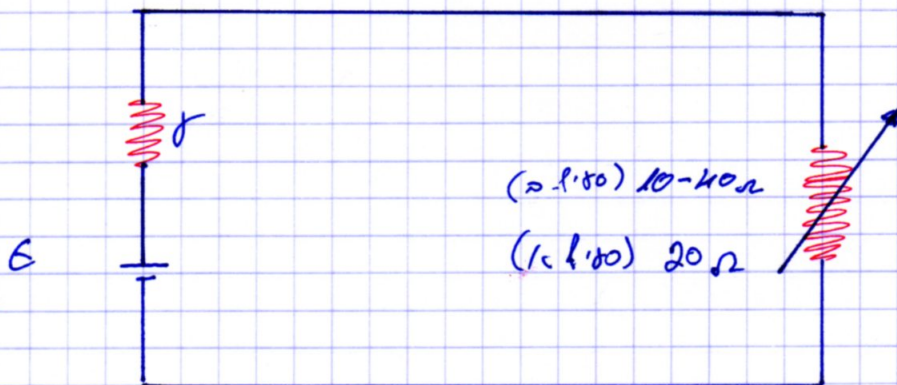
$$I_2 = \frac{U_{ab} - E_2}{r_2} = \frac{6.4 - 6}{0.5} = -0.8 \text{ A} \quad (-) \text{ נגד הכוון}$$

$$I_3 = \frac{U_{ab}}{R_3} = \frac{6.4}{2} = 3.2 \text{ A}$$

$$\textcircled{1d} \quad U_{ab} = 6.4 \text{ V} \quad \text{היחס בין המתחים}$$

$$\textcircled{1e} \quad P_{R3} = I_3^2 \cdot R_3 = 3.2^2 \cdot 2 = 20.48 \text{ W}$$

(2009 ન'વ/૯) 5 ની/૯



• e. jws

$$P_L = 33.8 \text{ W}$$

$$R_L = 20 \Omega$$

c) $U_{BL} = \sqrt{P \cdot R_L} = \sqrt{33,8 \cdot 20} = 26 \text{ V}$

לפי החישוב יוצא שההתאמה הספקית היא $URL = R = 20 \Omega$

$$E = U_{BL} + U_r = 26 + 26 = 52 \text{ V}$$

(P) $P = 30 \text{ W}$ $R_{L1} = 10 \Omega$ $R_{L2} = 40 \Omega$ $\therefore 2 \text{ ms}$

$$I_{RL1} = \frac{E}{R_L + r} = \frac{52}{10 + 20} = 1.7333 \text{ A}$$

$$U_{BL1} = E \cdot \frac{R_L}{R_L + r} = 52 \cdot \frac{10}{30} = 17.333 \text{ V}$$

(5)

$$I_{RL2} = \frac{E}{R_L + r} = \frac{52}{40 + 20} = 0.8666 \text{ A}$$

$$U_{Bl_2} = E \cdot \frac{Bl_2}{Bl_2 + r} = 52 \cdot \frac{40}{40 + 20} = 34.666 \text{ V}$$

ד) נתון שגובה הקיבול הח'אוס 8 הס"ר 140-10

30W 1.7A BL - 7700

$$\eta_u = \frac{P_{A21}}{P_{ET}} = \frac{30}{52 \cdot 1.733} = \frac{30}{90.131} = 33\%$$

$$\eta_2 = \frac{P_{BL2}}{P_{ET}} = \frac{30}{52 \cdot 0.866} = \frac{30}{45} = 66\%$$

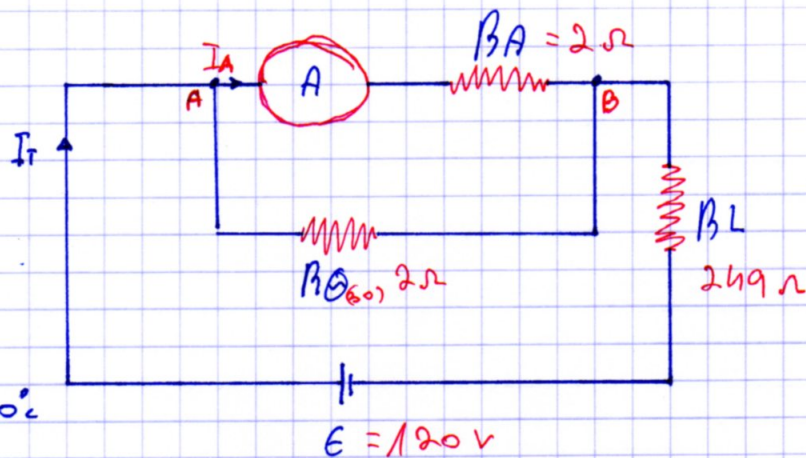
$\sqrt{825} \approx 28.72$

1. פתרון: 1.5×10^3 (כח)



(6)

(2003 г.р) 1 вариант



$$T_c = 30^\circ \text{C}$$

$$R_{\theta 30} = 2 \Omega$$

$$\alpha = 0.08 \frac{1}{^\circ \text{C}}$$

$$\textcircled{1} \quad U_{ab} = \frac{E}{\frac{R_L}{R_L + R_{\theta} + R_A}} = \frac{\frac{120}{249}}{\frac{249}{249} + \frac{2}{2} + \frac{2}{2}} = \frac{0.481}{1.004} = 0.479 \text{ V}$$

$$I_{R_L} = \frac{E - U_{ab}}{R_L} = \frac{120 - 0.479}{249} = 0.48 \text{ A}$$

$$I_{R_A} = I_T \cdot \frac{R_{\theta}}{R_{\theta} + R_A} = 0.48 \cdot \frac{2}{2+2} = 0.24 \text{ A}$$

$\textcircled{2}$

$$I_A = 0.4 \text{ A}$$

$$U_{R_A} = R_A \cdot I_A = 2 \cdot 0.4 = 0.8 \text{ V} = U_{ab}$$

$$I_T = \frac{E - U_{ab}}{R_L} = \frac{120 - 0.8}{249} = 0.478 \text{ A}$$

$$I_{R_{\theta}} = I_T - I_A = 0.478 - 0.4 = 0.078 \text{ A}$$

$$R_{\theta} = U_{ab} : I_{\theta} = 0.8 : 0.078 = 10.256 \Omega$$

$$R_{\theta} = R_T \cdot (1 + \alpha(T - 30))$$

$$10.256 = 2(1 + 0.08(T - 30)) =$$

$$T = 81.02^\circ \text{C}$$

(7)