2012/3/19 ①

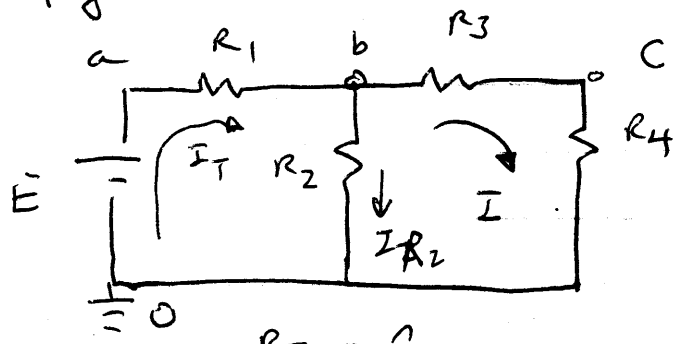
1) Ex 8.9 MATLAB Solution / Branch-Current Analysis

2) Ex 8.10 MATLAB Solution

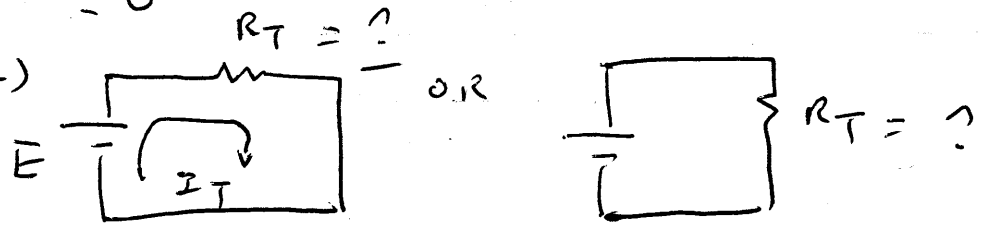
3) Ex 8.12 MATLAB / Mesh Analysis

Ch. 7

Fig 7.2



Step 1)



Step 2) $I_T = \frac{E}{R_T}$

Step 3) $I_T \cdot R_1$

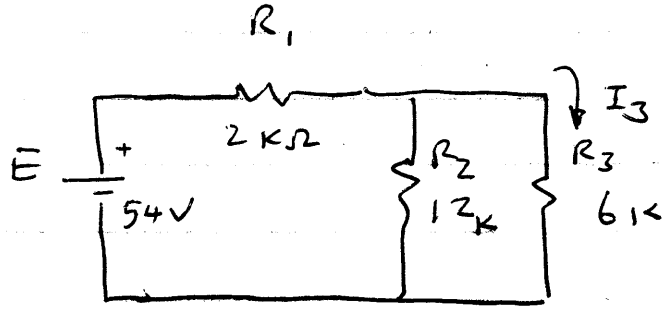
Step 4) $V_{bo} = V_b = E - V_{R_1}$

Step 5) $I_{R_2} = \frac{V_b}{R_2}$

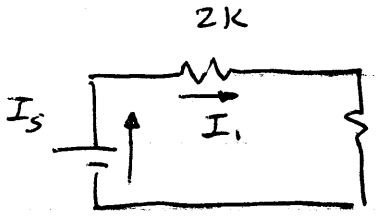
Step 6) $I = I_T - I_{R_2}$

...

Ex 7.1

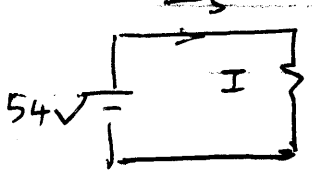


Sol



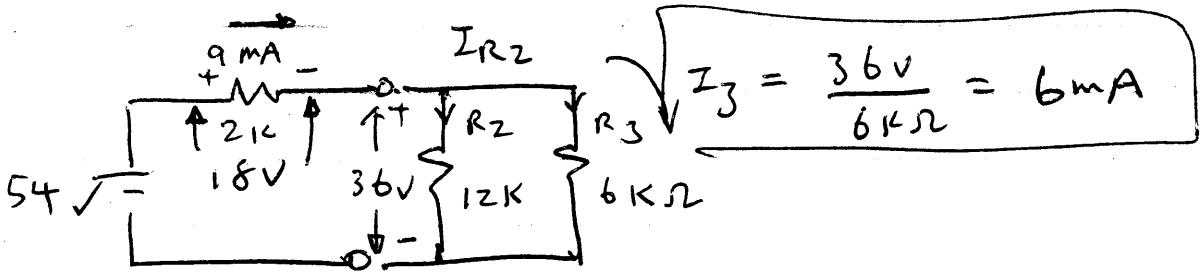
$R_T' = R_2 \| R_3 = \frac{R_2 \cdot R_3}{R_2 + R_3}$

$= \frac{72}{18} = 4\,K\Omega$



$4K + 2K = R_T = 6K$

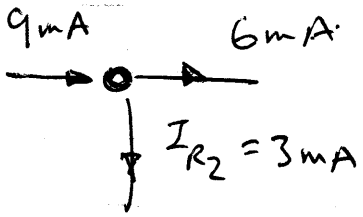
$I_S = \frac{E}{R_T} = \frac{54V}{6K} = 9\,mA = I_1$



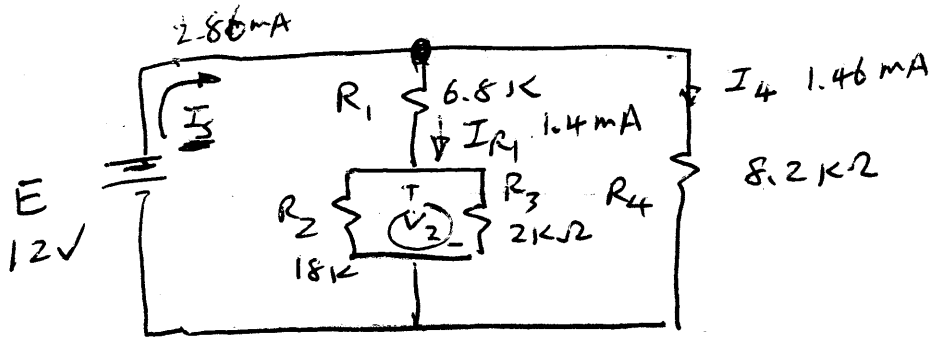
$I_3 = \frac{36V}{6K\Omega} = 6mA$

$54 - 18 = 36V$ $\qquad \frac{36V}{12K} = 3\,mA = I_{R2}$

KCL



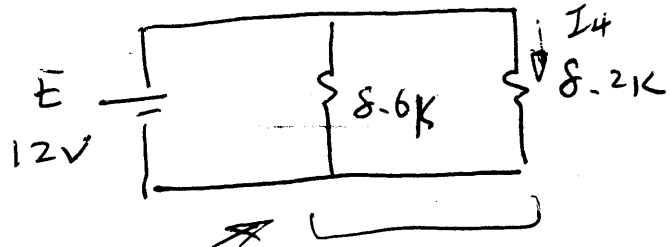
Ex 7-2.



$$R_T = (R_1 + (R_2 \| R_3)) \| R_4$$

$$R_2 \| R_3 = 2K \| 18K = \frac{36}{20} = 1.8\ K\Omega$$

$$R_1 + (R_2 \| R_3) = 6.8 + 1.8 = 8.6\ K\Omega$$



$$R_T = \frac{8.6 * 8.2}{8.6 + 8.2} = 4.2\ K\Omega$$

$$\boxed{I_S} = \frac{E}{R_T} = \frac{12}{4.2K} = 2.86\ mA \quad *$$

$$\boxed{I_4} = I_S \cdot \frac{8.6K}{8.6K + 8.2K} \qquad \text{CDR}$$

$$= 1.46\ mA \quad *$$

$$I_{R_1} = I_S - I_4$$

$$\boxed{V_2} = I_{R_1} \cdot (R_2 \| R_3)$$

$$= 1.4\ mA * 1.8\ K\Omega = 2.51\ V$$