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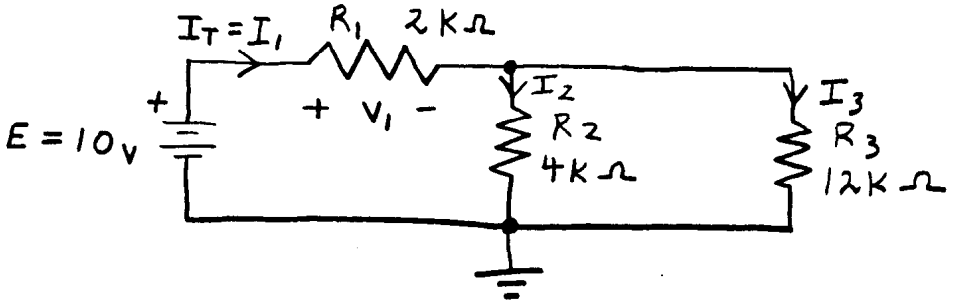
EET /23
OCT. 33, 1999

**5-4** GIVEN THE FOLLOWING CKT:




(a) FIND THE TOTAL CURRENT $I_T$.

$$R_2 \| R_3 = \frac{R_2 R_3}{R_2 + R_3} = \frac{(4\times10^3)(12\times10^3)}{4\times10^3 + 12\times10^3} = \frac{48\times10^6}{16\times10^3} = 3\times10^3\,\Omega$$

$$R_T = R_1 + R_2 \| R_3 = 2\times10^3 + 3\times10^3 = 5\times10^3\,\Omega$$

$$I_T = \frac{E}{R_T} = \frac{10V}{5\times10^3\,\Omega} = 2\times10^{-3}\,A = \boxed{2\text{ mA}}$$

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(b) FIND THE VOLTAGE ACROSS $R_1$.

$$V_1 = I_T \times R_1 = (2\times10^{-3})(2\times10^3) = \boxed{4\text{ V}}$$

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**5-5** FOR PROBLEM 5-4 FIND THE FOLLOWING:

(a) $I_2$.

$$I_2 = \frac{R_3}{R_2 + R_3} \times I_T = \frac{12\times10^3}{4\times10^3 + 12\times10^3} \times 2\times10^{-3}$$

$$= \frac{12\times10^3}{16\times10^3} \times 2\times10^{-3} = 1.5\times10^{-3}\,A = \boxed{1.5\text{ mA}}$$

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(b) $I_3$.

$$I_3 = I_T - I_2 = 2\text{ mA} - 1.5\text{ mA} = \boxed{0.5\text{ mA}}$$

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