Performance 3

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Submitted By

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Course: Electrical Circuits (EEE141)

Section: 05

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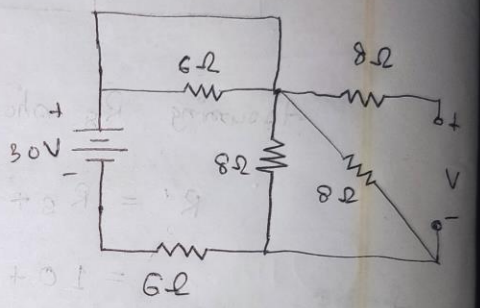
Problem 1.

Here,

$8\Omega \| 8\Omega = 4\Omega$.

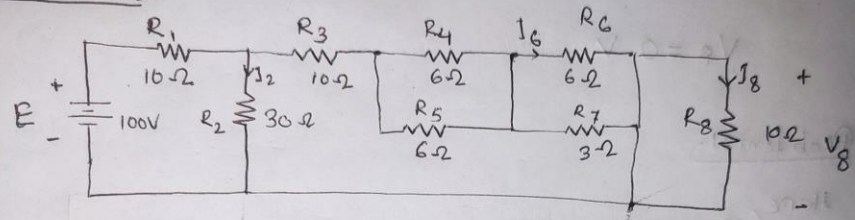


So, $I = \frac{E}{R_T} = \frac{30V}{4\Omega + 6\Omega} A$.

$= 3A$.

$\therefore V = I(8\Omega \| 8\Omega) = (3A)(4\Omega) = 12V$.

Problem: #2



Assuming R_8 shorted,

$$R' = R_3 + (R_4 \| R_5) + (R_6 \| R_7)$$

$$= 10 + (6 \| 6) + (6 \| 3).$$

$$= 15\,\Omega.$$

$$R_T = R_1 + R_2 \| R'$$

$$= 10\,\Omega + 30 \| 15 = 10\,\Omega + 10\,\Omega = 20\,\Omega.$$

$$I = \frac{E}{R_T} = \frac{100}{20\Omega} = 5A.$$

$$I_2 = \frac{I}{R' + R_2}(R') = \frac{5}{15 + 30}(15) = 1.67A.$$

So, $I_3 = I - I_2 = 5 - 1.67 = 3.33\ A$.

$$I_6 = \frac{(R_7)(I_3)}{R_7 + R_6} = \frac{(3\,\Omega)(3.33A)}{3\,\Omega + 6\,\Omega} = 1.11A,$$

$I_8 = 0\ A$

Again, $V_4 = I_3 (R_4 \| R_5) = (3.33A)(3\,\Omega) = 10V$.

$V_8 = 0\ V$.