CSE 250. Quiz : 02

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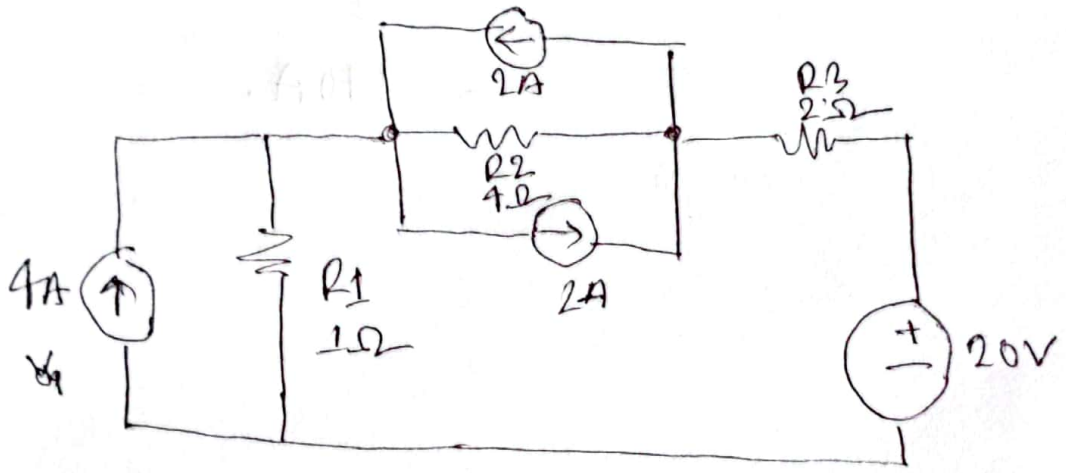
Section: 03

Answer to the question no: 01



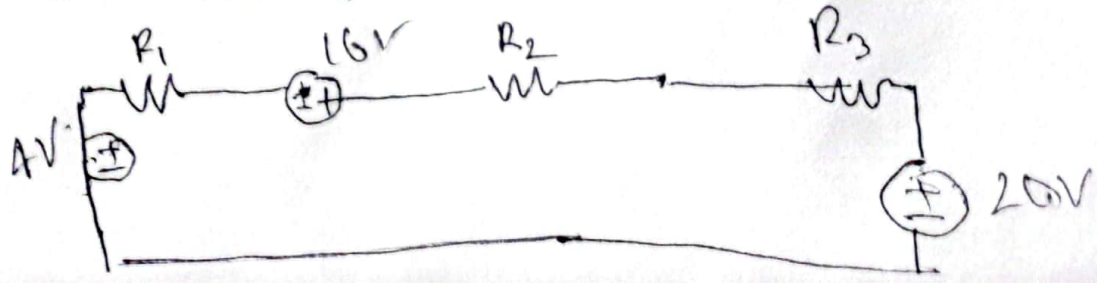
For R1:

$V_1 = I \cdot R_1 = 4V.$

For R_2:

$V_2 = I R_2 = (2+2) \cdot 4 = 16V.$

Transformed circuit:



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So, $V = 4 + 16 + 20$

$= 40V.$

$R_T = 1 + 4 + 2$

$= 6 + 1 = 7\Omega$

∴ Current through R_3: $\frac{R_T}{R_3} \times 40V.$

$= \frac{7}{2} \times 40$

$= 140A.$

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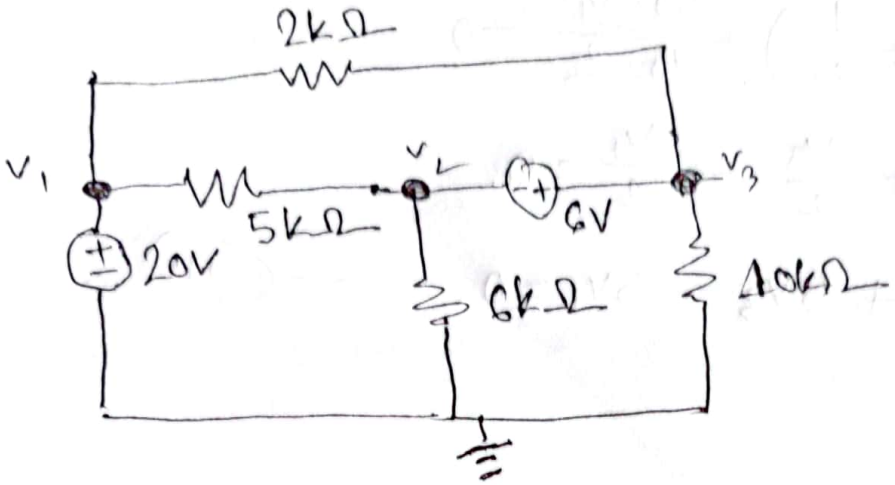
Solution no. 02



For V_1, applying KVL:

$$V_1\left(\frac{1}{2}+\frac{1}{5}\right)-\frac{V_3}{2}-\frac{V_2}{5}=0.$$

$$\Rightarrow \frac{V_1}{2}+\frac{V_1}{5}-\frac{V_3}{2}-\frac{V_2}{5}=0.$$

$$\Rightarrow \frac{7V_1}{10}-\frac{V_3}{2}-\frac{V_2}{5}=0. \quad \text{---(i)}$$

For V_2 applying KVL:

$$V_2\left(\frac{1}{5}+\frac{1}{6}\right)-\frac{V_1}{5}-\frac{0}{6}=0$$

$$\Rightarrow V_2\left(\frac{1}{5}+\frac{1}{6}\right)-\frac{V_1}{5}-0=0.$$

$$\Rightarrow \frac{V_2}{5}+\frac{V_2}{5}-\frac{V_1}{5}=0. \quad \text{---(ii)}$$

$$\Rightarrow V_2+V_2-V_1=0.$$

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For V_3, applying KVL:

$$V_3\left(\frac{1}{10}+\frac{1}{2}\right)-\frac{0}{10}-\frac{V_1}{2}=0.$$

$$\Rightarrow \frac{V_3}{10}+\frac{V_3}{2}-\frac{V_1}{2}=0.$$

$$\Rightarrow V_3+5V_3-5V_1=0. \quad \text{---(iii)}$$

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