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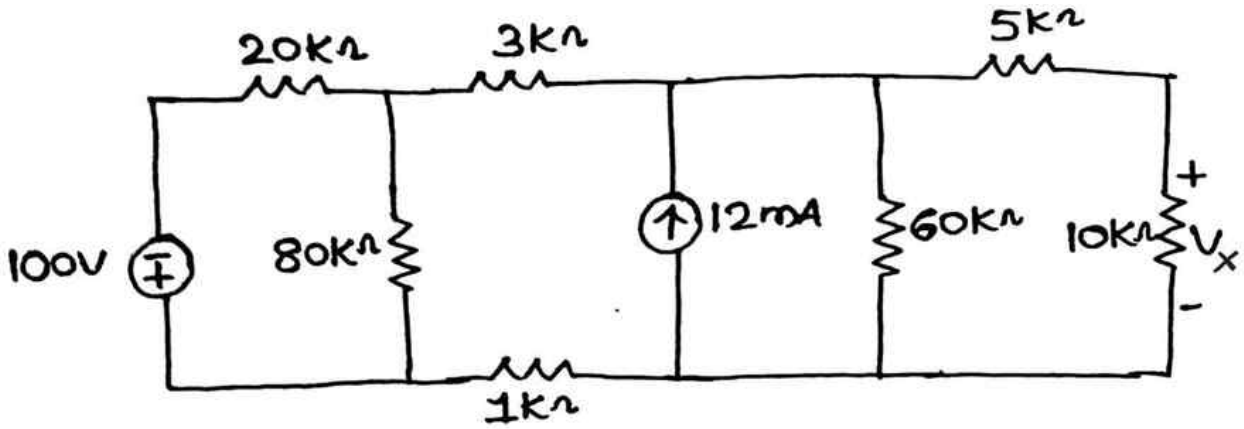
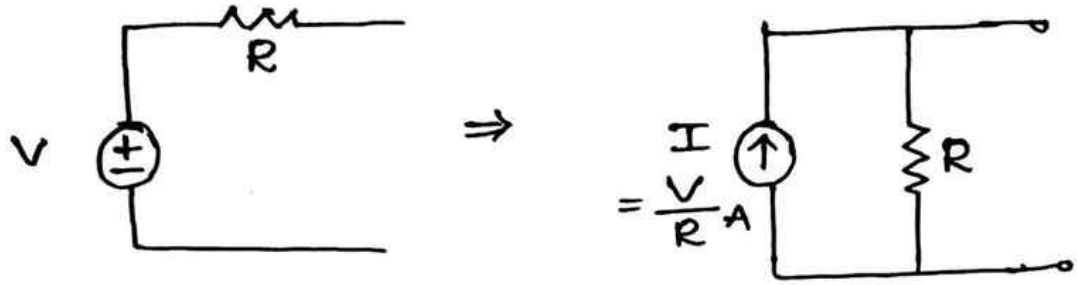
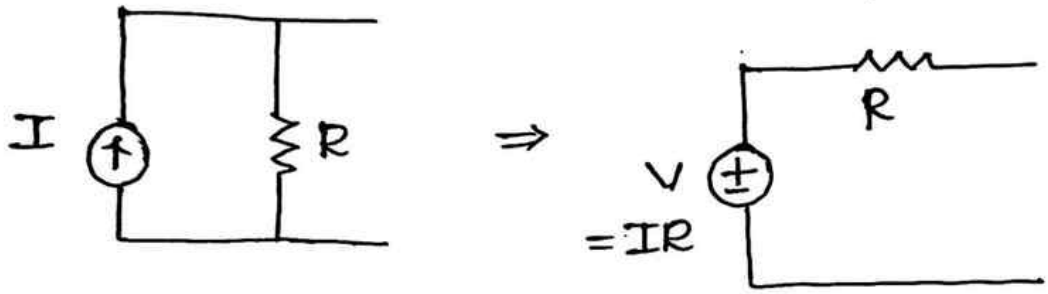
Answer

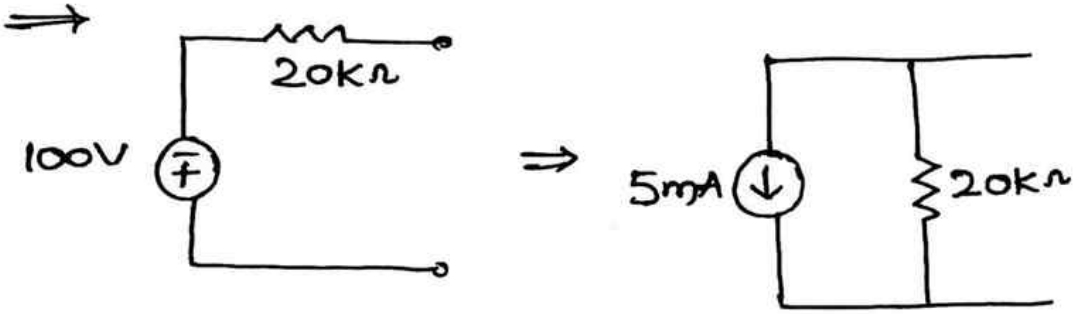


Source Transformation

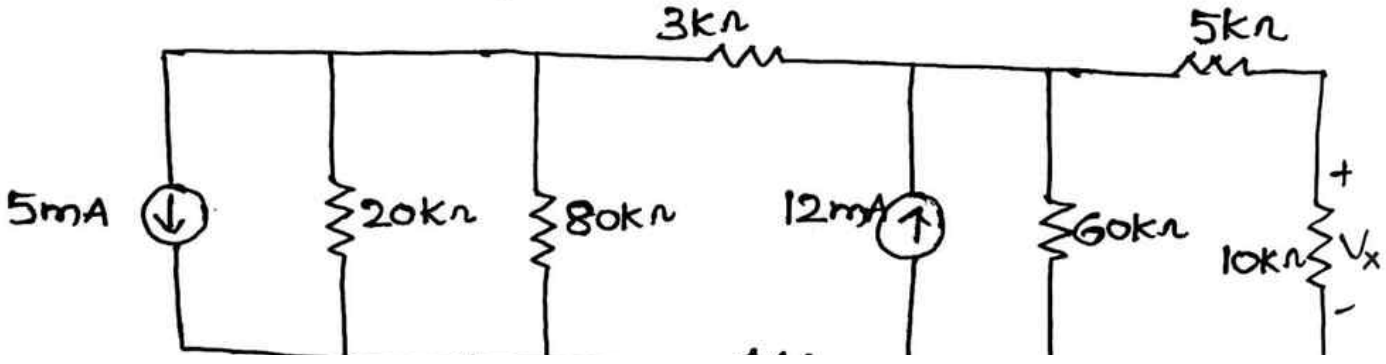


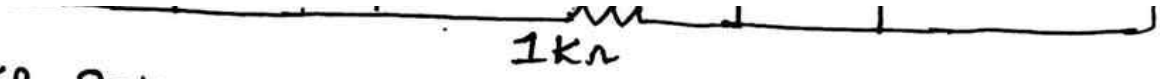


⇒



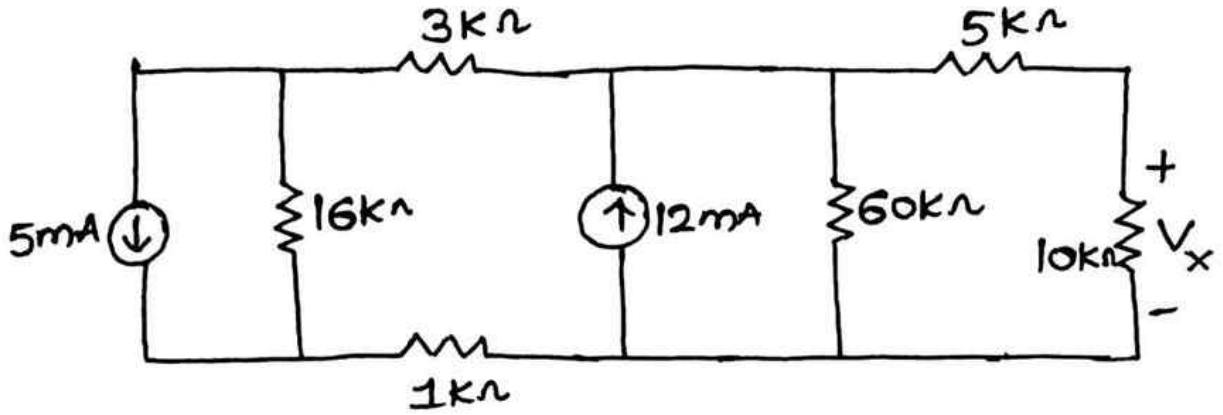
The circuit becomes;

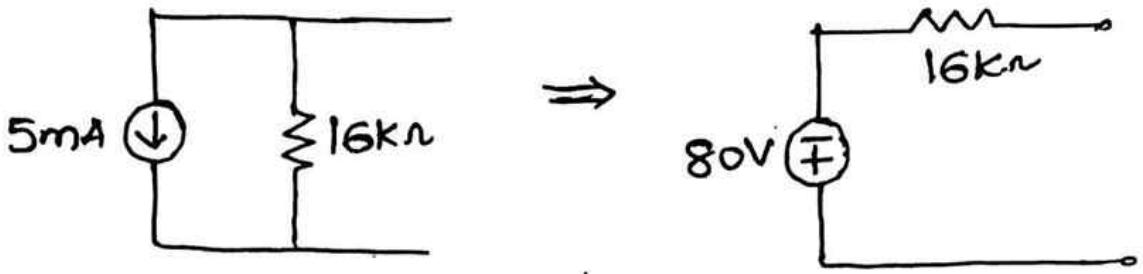


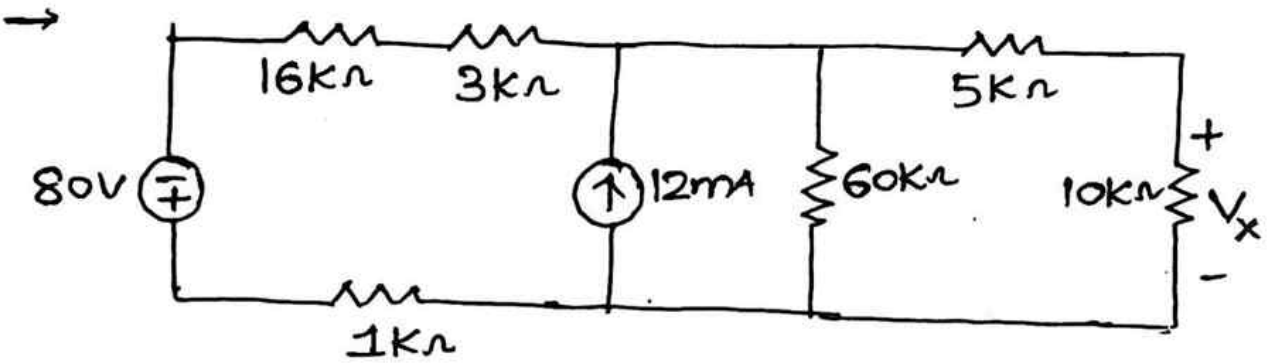


20kΩ, 80kΩ are in parallel

$$= \frac{20K \times 80K}{20K + 80K} = 16k\Omega$$

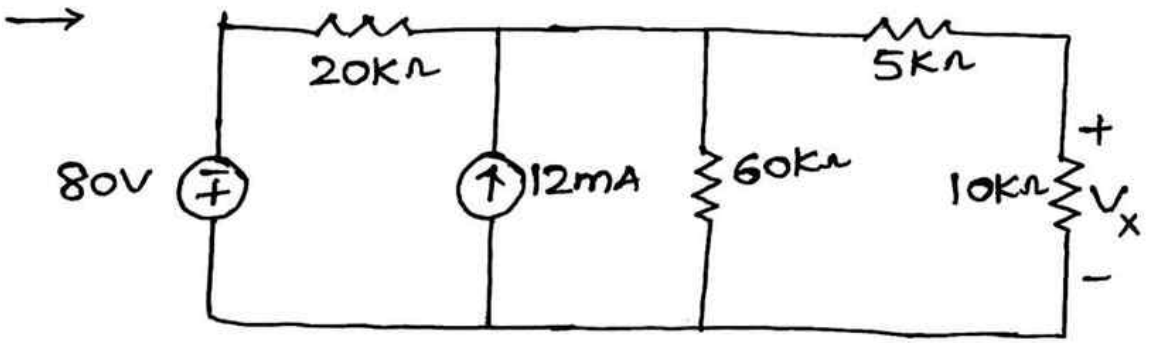


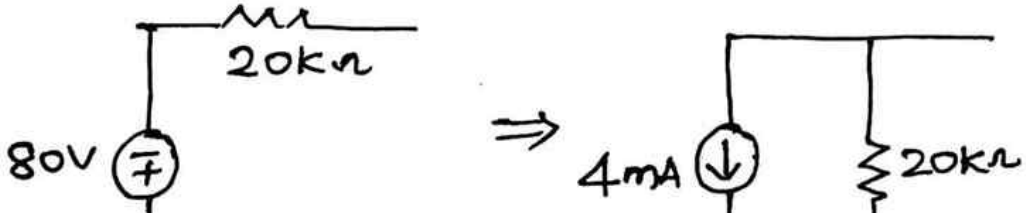


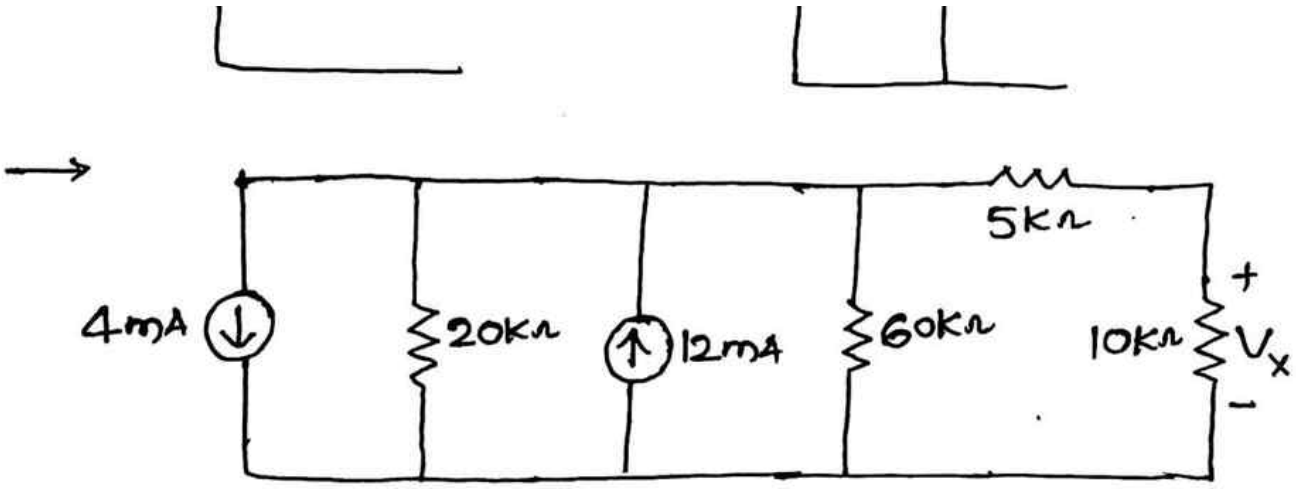


16kΩ, 3kΩ, 1kΩ are in series

$= 16K + 3K + 1K = 20k\Omega$

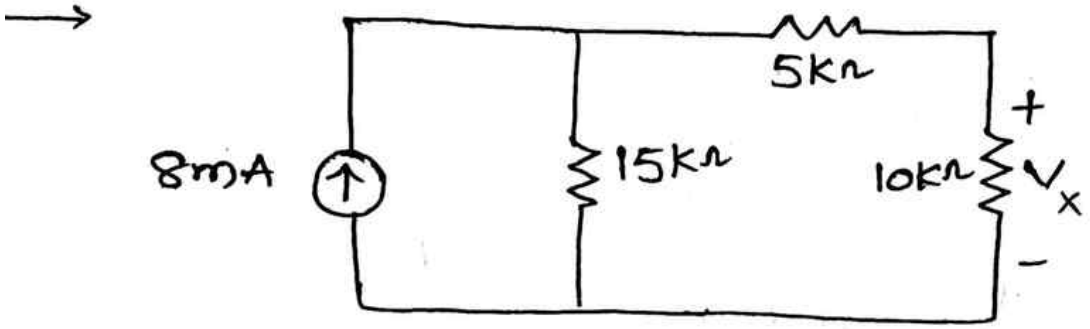


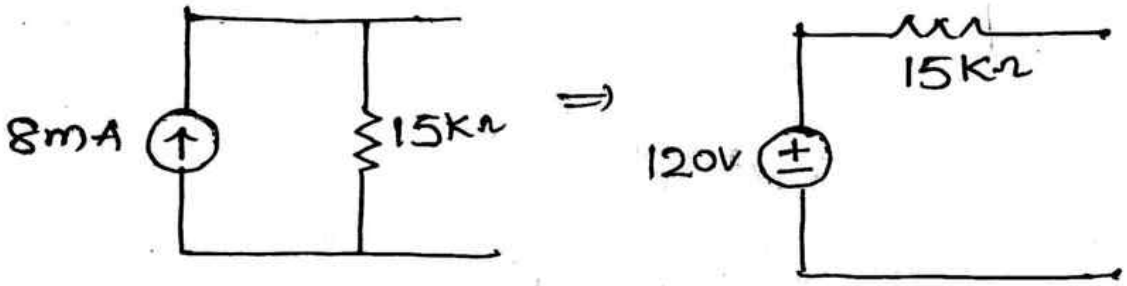


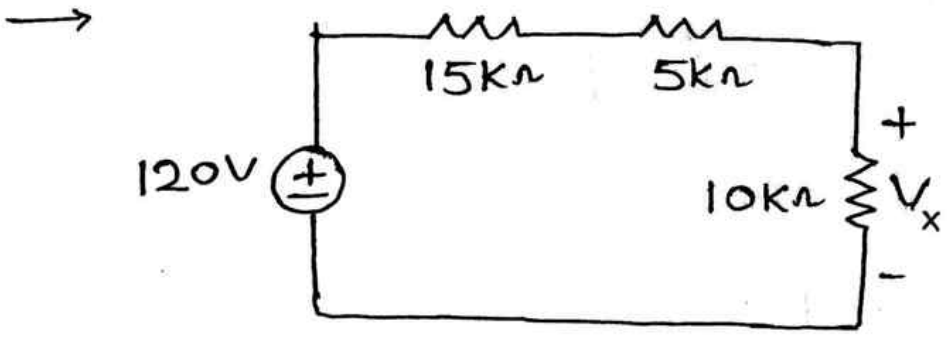

5kΩ
4mA
20kΩ
12mA
60kΩ
10kΩ
+
V_x
−

20kΩ, 60kΩ are in parallel

$$= \frac{20K \times 60K}{20K + 60K} = 15K\Omega$$

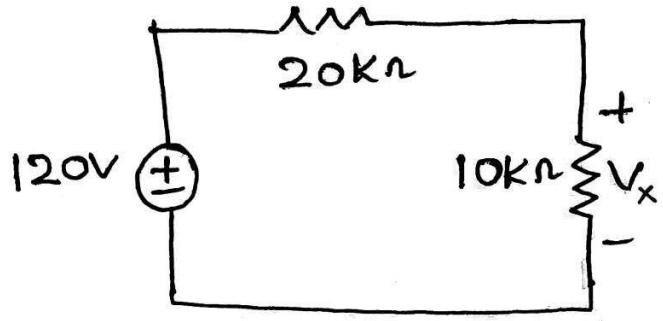






15kΩ, 5kΩ are in series

$= 15K + 5K = 20K\Omega$



By voltage division rule,

$$V_x = 120 \times \left[\frac{10k}{10k+20k}\right] = 120 \times \frac{10}{30} = 40V$$

$$\therefore V_x = 40V$$

Likes: 0 **Dislikes: 0**