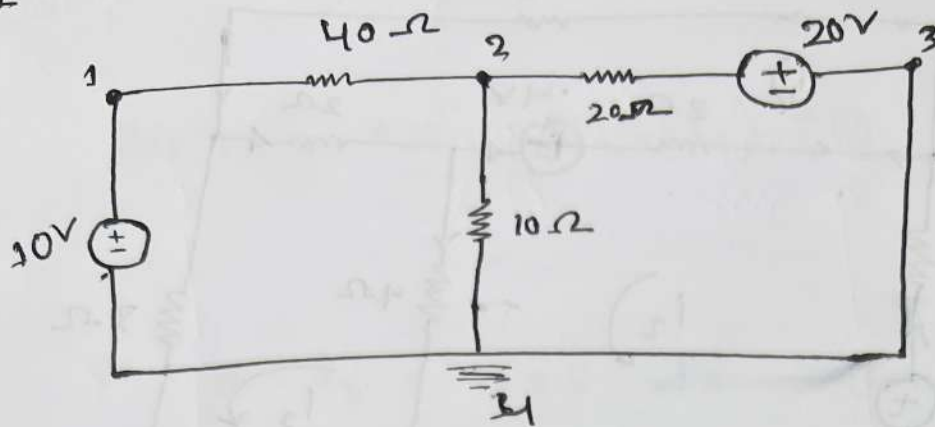


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$$\frac{v_1 - v_2}{40} + \frac{v_1 - 10}{10} = 0 \quad \text{--- (1)}$$

$$\frac{v_2 - v_{\text{ground}}}{10} + \frac{v_2 - 20}{20} + \frac{v_2 - v_1}{40} = 0$$

$$\Rightarrow \frac{v_2}{10} + \frac{v_2 - 20}{20} + \frac{v_2 - v_1}{40} = 0 \quad \text{--- (2)}$$

$$\Rightarrow \frac{8v_2 + 4v_2 - 80 + 2v_2 - 2v_1}{80} = 0$$

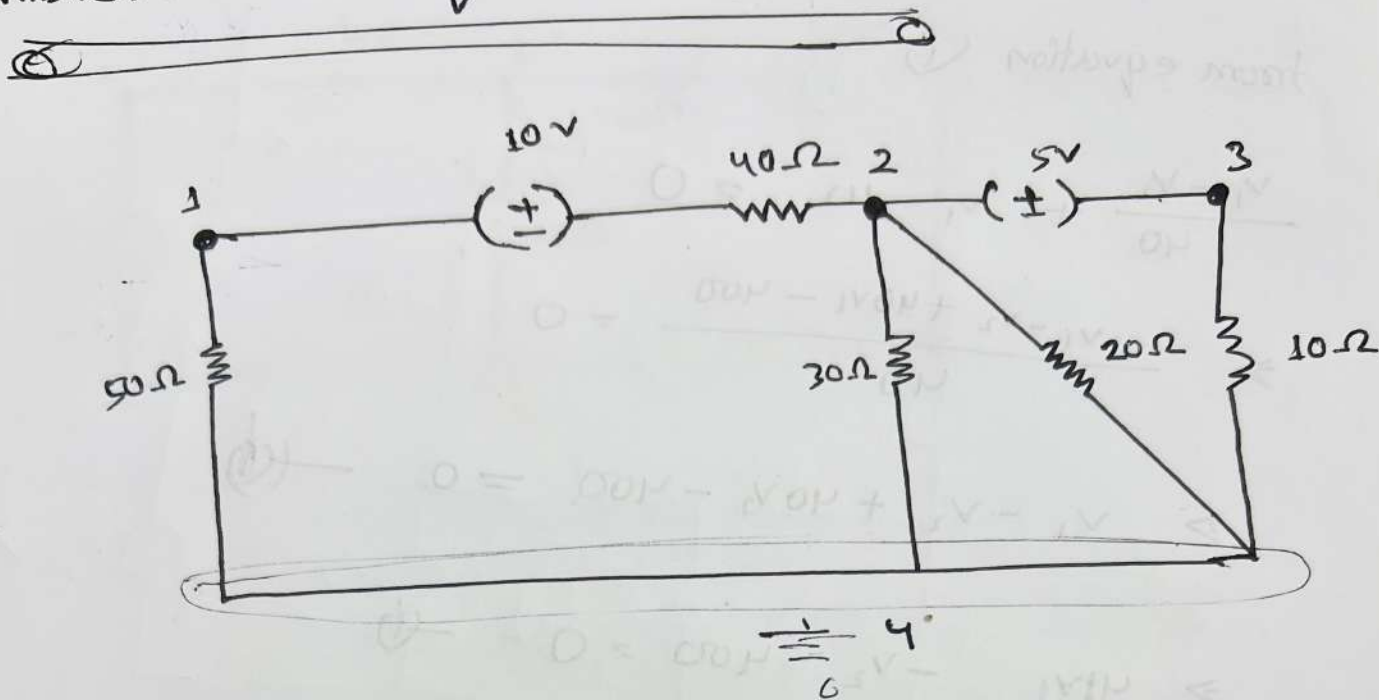
$$\Rightarrow 8v_2 + 4v_2 - 80 + 2v_2 - 2v_1 = 0 \quad \text{--- (3)}$$

$$\Rightarrow 14v_2 - 2v_1 - 80 = 0$$

$$\Rightarrow 2v_1 - 14v_2 + 80 = 0 \quad \text{--- (4)}$$

$$2v_1 - 14v_2 = -80$$

Answer to the question no. 2.



~~$$\frac{v_1 - v_4}{50} + \dots$$~~

$$\frac{v_2 - 10}{40} + \frac{v_2 - v_4}{30} + \frac{v_2 - v_4}{20} + v_2 - 5 = 0$$

$$\Rightarrow \frac{6v_2 - 60 + 8v_2 - 80 + 12v_2 - 0 + 240v_2 - 1200}{240} = 0$$

$$\Rightarrow 6v_2 - 60 + 8v_2 + 12v_2 + 240v_2 - 1260 = 0$$

$$\Rightarrow 266v_2 - 1260 = 0$$

$$\Rightarrow v_2 = \frac{1260}{266} = 4.736$$

from equation (i)

$$\frac{v_1 - v_2}{40} + v_1 - 10 = 0$$

$$\Rightarrow \frac{v_1 - v_2 + 40v_1 - 400}{40} = 0$$

$$\Rightarrow v_1 - v_2 + 40v_1 - 400 = 0 \quad \text{--- (1)}$$

$$\Rightarrow 41v_1 - v_2 - 400 = 0 \quad \text{--- (2)}$$

$$\Rightarrow 41v_1 - v_2 = 400$$

$$v_1 = -\frac{1420}{143}, \quad v_2 = -\frac{1020}{143}$$

$$= 9.930 \text{ v} \quad \text{--- (3)} \quad \text{--- (4)}$$

*[Handwritten signature]*