

$$\textcircled{1} \quad \frac{V_1 - V_2}{40} + V_1 - 10 = 0 \quad \text{--- (1)}$$

$$\Rightarrow \frac{V_2 - V_1}{40} + \frac{V_2 - 20}{20} + \frac{V_2}{10} = 0$$

$$\Rightarrow \frac{2V_2 - 2V_1 + 4V_2 - 80 + 8V_2}{80} = 0$$

$$\Rightarrow 14V_2 - 2V_1 - 80 = 0 \quad \text{--- (2)}$$

from equation - 1

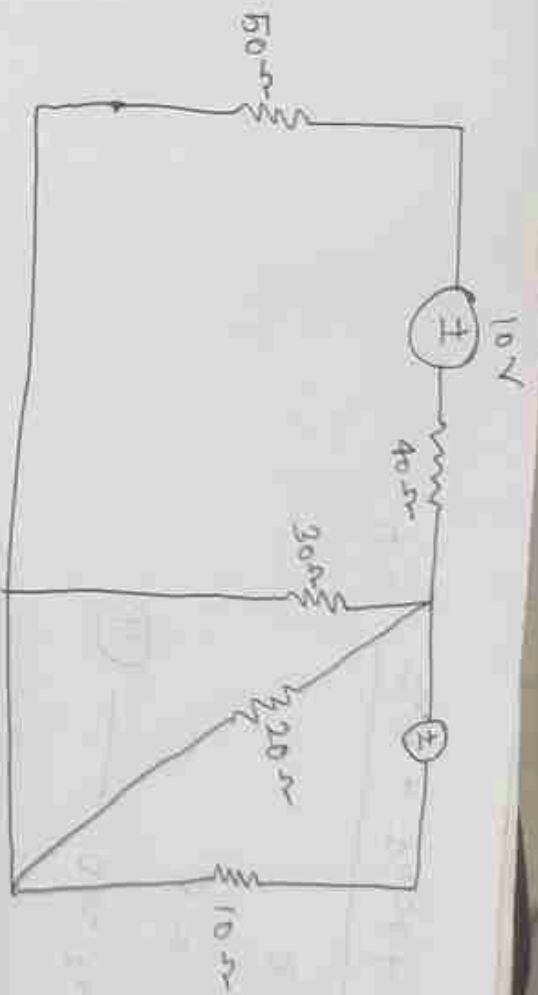
$$\frac{V_1 - V_2}{40} + V_1 - 10 = 0$$

$$\Rightarrow \frac{V_1 - V_2 + 40V_1 - 400}{40} = 0$$

$$\Rightarrow 41V_1 - V_2 - 400 = 0$$

$$V_1 = 9.93$$

$$V_2 = 7.13 \quad \text{Ans.}$$



equation 1 :-

$$\frac{V_1}{50} + \frac{V_1 - 20}{40} + \frac{V_1 - V_2}{30} = 0$$

$$\Rightarrow \frac{12V_1 + 15V_1 - 300 + 20V_1 - 20V_2}{600} = 0$$

$$\Rightarrow 47V_1 - 20V_2 = 300 \quad \text{--- (1)}$$

equation 2 :-

$$30 \parallel 20 = \frac{30 \times 20}{30 + 20} = 12$$

$$\therefore \frac{V_2 - V_1}{12} + \frac{V_1}{5} + \frac{V_2}{10} = 0$$

$$\Rightarrow \frac{\sum V_2 - 5V_1 + 12V_2 + 6V_2}{60} = 0$$

$$\Rightarrow 23V_2 - 5V_1 = 0$$

$$\Rightarrow -5V_1 + 23V_2 = 0 \quad \text{--- (ii)}$$

(Analysis (i) and (ii))

$$V_1 = 7.0336 \text{ V}$$

$$V_2 = 1.52 \text{ V}$$