

$$\textcircled{1} \quad \frac{V_1}{50} + \frac{V_2 - 20}{40} + \frac{V_1 - V_2}{30} = 0$$

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

$$= 47V_1 - 20V_2 = 300 \quad \textcircled{1}$$

$$\textcircled{2} \Rightarrow 30 \parallel 20 \Rightarrow \frac{30 \times 20}{30 + 20}$$

$$\Rightarrow 12$$

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

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

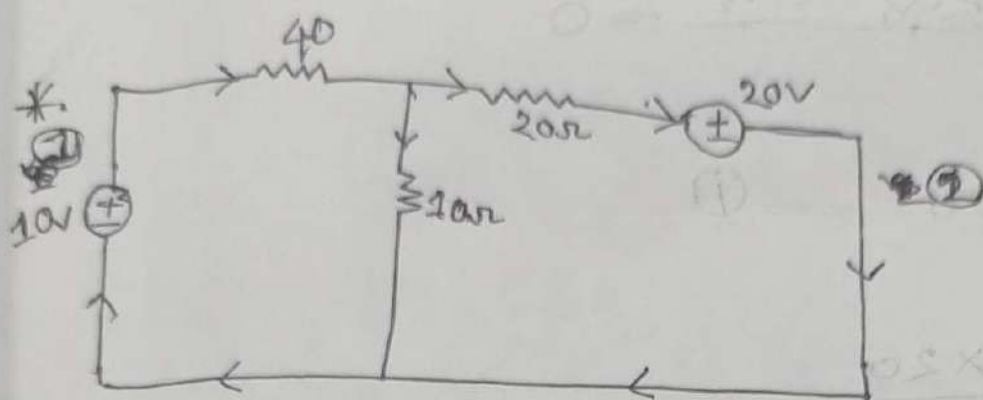
$$\Rightarrow 23V_2 - 5V_1 = 0$$

$$\Rightarrow -5V_1 + 23V_2 = 0 \quad \textcircled{11}$$

Analysis: i and $\textcircled{11}$

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

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



~~① $V_1 = -10$~~

① $\Rightarrow V_1 = -10V$ — ①

Using KCL in ②

② $\Rightarrow \frac{V_2 - V_1}{10} + \frac{V_2 - 20}{20} = 0$

$\Rightarrow \frac{3V_2 - 2V_1 + V_2 - 20}{20} = 0$

$= 3V_2 - 2V_1 = 20$ — ②

Analysis between ② and ①

$V_1 = -10V$

$V_2 = -25V$