

Name Hital Ichan

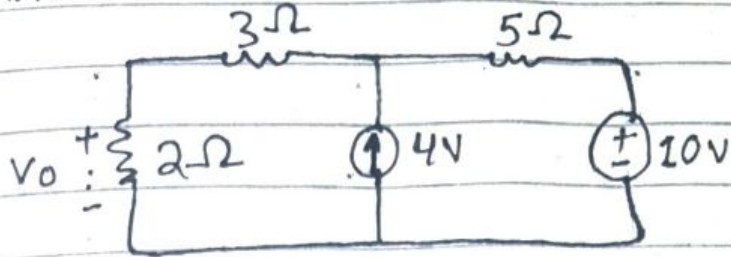
ID
Assignment
Program

6966
01
B.Tech Electrical

Subject Network Analysis.

Submitted to Engr Amir Aman.

Q. Use the superposition theorem to find V_0 in the circuit shown below.

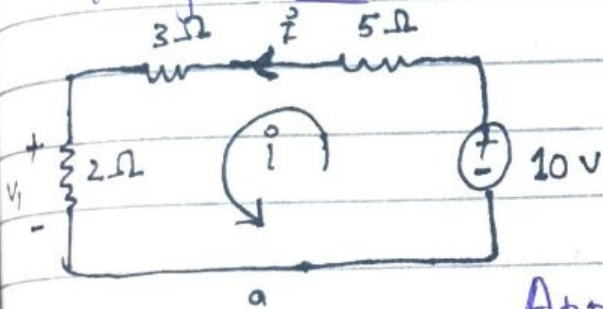


Solution:

$$\text{Let } V_0 = V_1 + V_2$$

Where V_1 and V_2 are contributions to the 10V and 4A respectively.

To get V_1 , consider the circuit in Fig:



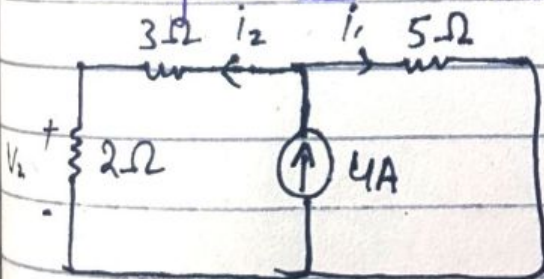
Apply Ohm's law

$$(2 + 3 + 5)i = 10$$

$$\rightarrow i = 10 / (10) = 1A$$

$$V_1 = 2i = 2V$$

To get V_2 consider the circuit:



$$i_1 = i_2 = 2A, V_2 = 2i_2 = 4V$$

Thus,

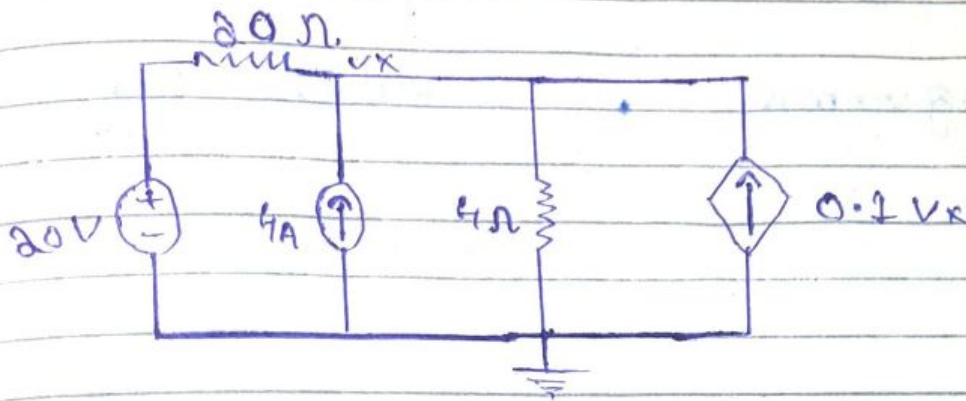
$$V = V_1 + V_2$$

$$V = 2 + 4$$

$$V = \underline{6V}$$

Question 02

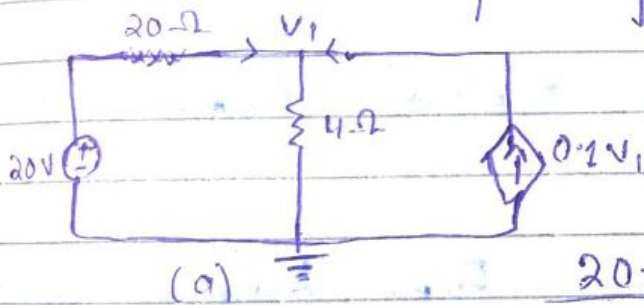
Use Superposition to find V_x in the circuit given.



Solution

Let $V_x = V_1 + V_2$

Where V_1 and V_2 are due to the 20V and 4A sources respectively.



Apply KCL

To obtain V_1 , consider

$$\frac{20 - V_1}{20} + 0.1V_1 = \frac{V_1 - 0}{4}$$

$$\rightarrow V_1 = 5V$$

For V_2 consider

$$4 + 0.1V_2 = \frac{V_2 - 0}{20} + \frac{V_2 - 0}{4}$$

$$V_2 = 20$$

Thus,

$$V_x = V_1 + V_2 = \underline{25V}$$

