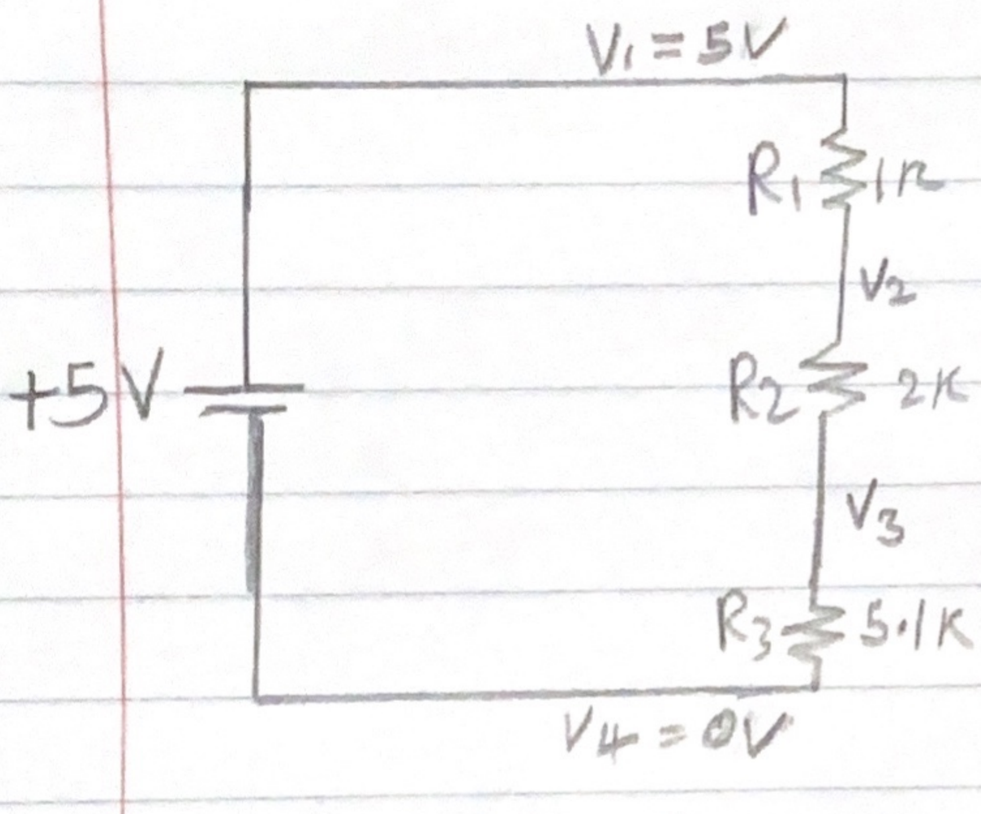
WII · CSE PROJECTS

Hand Analysis :

Given Circuit



$V_1 = 5V$, $R_1 = 1K$
$V_2 = ?$, $R_2 = 2K$
$V_3 = ?$, $R_3 = 5.1K$
$V_4 = 0V$

As the circuit is in Series :

$\Rightarrow R_{max} = R_1 + R_2 + R_3$

$\Rightarrow R_{max} = 1K + 2K + 5.1K = 8.1K$

$\therefore R_{max} = 8.1K$

Ohm's Law :- $I = \frac{V_{source}}{R_{Total}} = \frac{5V}{8.1K\Omega} = \frac{5}{8100} A = 0.000617A \text{ or } 617\mu A$

Voltage drop Across each Resistors :- $\boxed{V = IR}$

V_1 across R_1 : $V_1 = I \cdot R_1 = 0.000617A \cdot 1K\Omega = 0.617V$
V_2 across R_2 : $V_2 = I \cdot R_2 = 0.000617A \cdot 2K\Omega = 1.234V$
V_3 across R_3 : $V_3 = I \cdot R_3 = 0.000617A \cdot 5.1K\Omega = 3.147V$

$V_1 = 5V$ $V_4 = 0V$
$V_2 = V_1 -$ Voltage drop at $R_1 = 5V - 0.617 = 4.383V$
$V_3 = V_2 -$ Voltage drop at $R_2 = 4.383V - 1.234V = 3.149V$

$\therefore V_2 = 4.383V, V_3 = 3.149V$