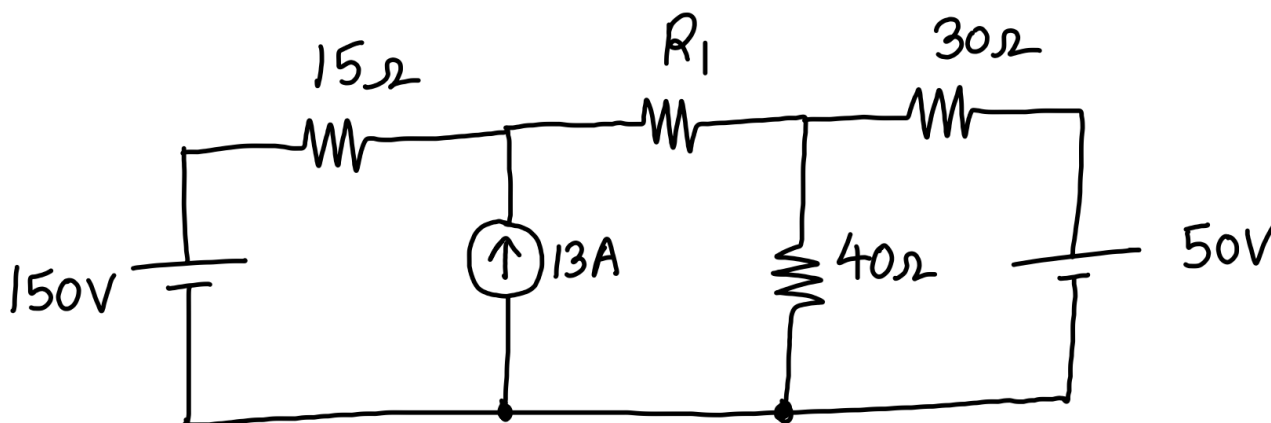


<b>Course Name:</b>	<b>Elements of Electrical and Electronics Engineering</b>	<b>Semester:</b>	<b>I</b>
<b>Exam:</b>	<b>EEEE IA1</b>	<b>Division:</b>	<b>C1 to C7</b>

**Q1.** Calculate the current through  $30\ \Omega$  resistor using Thevenin's theorem. In the circuit shown in figure 1, the value of  $R_1$  will be the **last two digits of roll no. times  $\Omega$**

For eg: For Roll no: 1000020, then  $R_1 = 20\ \Omega$ . If your last digits are from 01 to 10, kindly add 10 to your last two digits, so roll no with last two digits with 01 will become 11, then  $R_1 = 11\ \Omega$  **(ODD ROLL NO ATTEMPT Q1)**

Solve the numerical theoretical and measure  $V_{th}$ ,  $R_{th}$  and current through  $30\ \Omega$  load resistor ( $I_L$ )



**Figure 1**

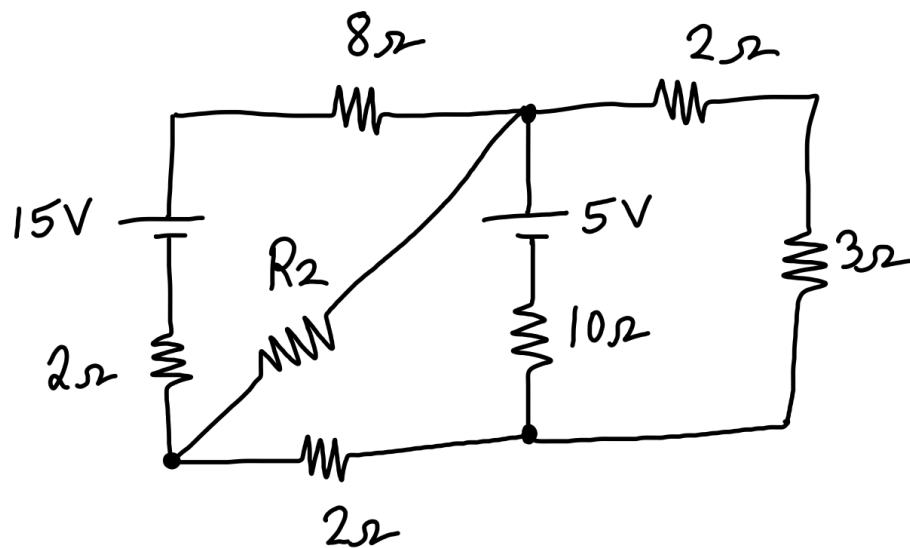
Simulate the circuit shown in figure 1, using LTspice software and measure  $V_{th}$ ,  $R_{th}$  and  $I_L$ . Tabulate the results as shown in the table below.

Parameter	Theoretical value	Simulated value
Thevenin's voltage $V_{th}$	141.667 V	141.667 V
Thevenin's resistance $R_{th}$	17.7778 ohm	17.7778 ohm
Load current $I_L$	2.96511 A	2.96511 A

**Q2.** Calculate the current through  $3\ \Omega$  resistor using Norton's theorem. In the circuit shown in figure 2, the value of  $R_2$  will be the **last two digits of roll no. times  $\Omega$**

For eg: For Roll no: 1000020, then  $R_1 = 20\ \Omega$ . If your last digits are from 01 to 10, kindly add 10 to your last two digits, so roll no with last two digits with 01 will become 11, then  $R_1 = 11\ \Omega$  **(EVEN ROLL NO ATTEMPT Q2)**

Solve the numerical theoretical and measure  $I_N$ ,  $R_N$  and current through  $3\ \Omega$  load resistor ( $I_L$ )



**Figure 2**

Simulate the circuit shown in figure 2, using LTspice software and measure  $V_{th}$ ,  $R_{th}$  and  $I_L$ . Tabulate the results as shown in the table below.

Parameter	Theoretical value	Simulated value
Norton's current $I_N$		
Norton's resistance $R_N$		
Load current $I_L$		

- Q3.** Explain Switch Fuse unit (SFU) and MCB with a neat labelled diagram.
- Q4.** Explain the principle & working of Energy meter with a neat labelled diagram.
- Q5.** Explain the principle & working of Megger with a neat labelled diagram.
- Q6.** Mention the types of batteries and explain the important characteristics for batteries.
- Q7.** Compare incandescent light bulb, compact fluorescent lamp (CFL), and LED (write any 8 points of differences)

**If last two digits of roll no are from 00, 01 to 20, attempt Q3**

**If last two digits of roll no are from 21 to 40, attempt Q4**

**If last two digits of roll no are from 41 to 60, attempt Q5**

**If last two digits of roll no are from 61 to 80, attempt Q6**

**If last two digits of roll no are from 81 to 99, attempt Q7**

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