CE211-L Circuit Analysis Lab

Lab Report # 10

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Semester: **03**

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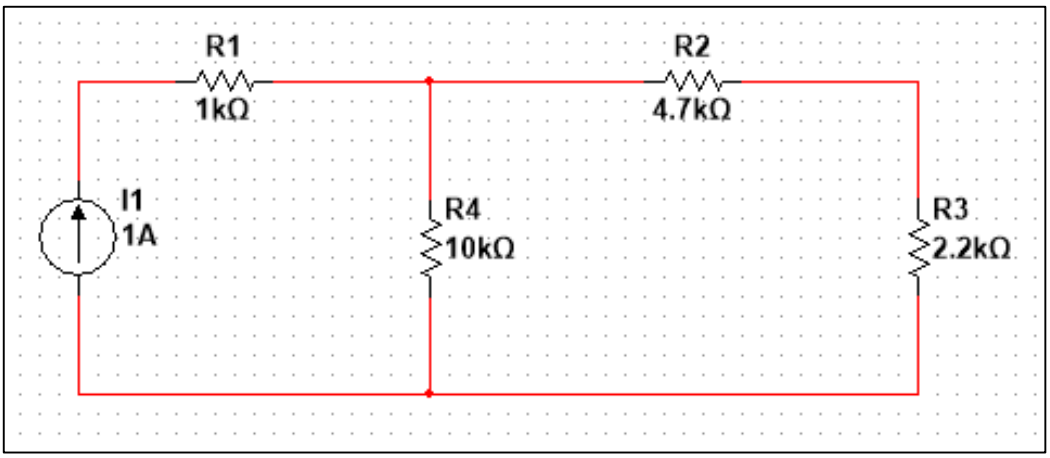
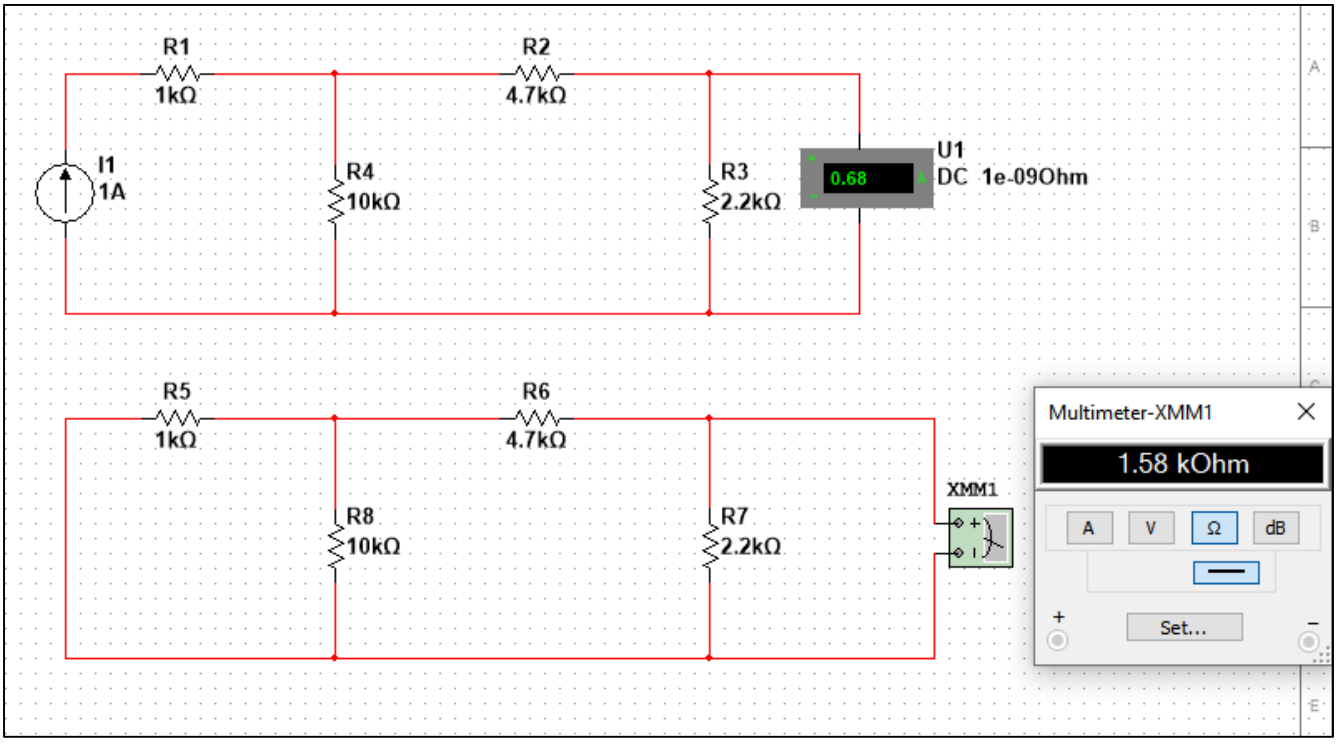
Task Statement:

1. **Calculate the current (I_N) and resistance (R_{th}) in the given circuit.**



Solution



Apply Mesh Analysis:

$I_1 = 1A$

KVL on Loop 2:
$10k(I_2 - I_1) + 4.7k(I_2) + 2.2k(I_2 - I_3) = 0$
$-10k\ I_1 + 16.9k\ I_2 - 2.2k\ I_3 = 0$
$16.9k\ I_2 - 2.2k\ I_3 = 10k$ **– (1)**

KVL on Loop 3:
$2.2k\ (I_3 - I_2) = 0$
$2.2k\ I_3 - 2.2k\ I_2 = 0$ **– (2)**

$I_2 = 0.68$ A
$I_3 = 0.68$ A

$I_N = I_3 = 0.68$ A

$R_{1k \parallel 10k} = 0.90\ k\Omega$
$R_{series} = 5.6\ k\Omega$
$R_{5.6k \parallel 2.2k} = 1.58\ k\Omega$

I_N = 0.68 A
R_{TH} = 1.58 kΩ