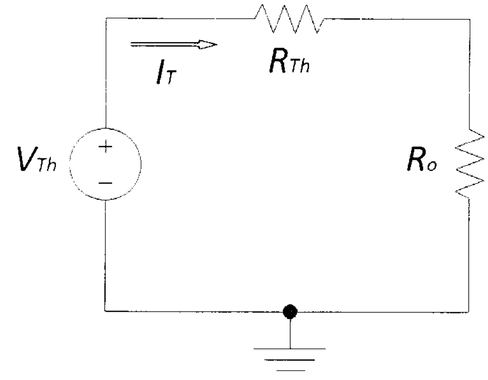


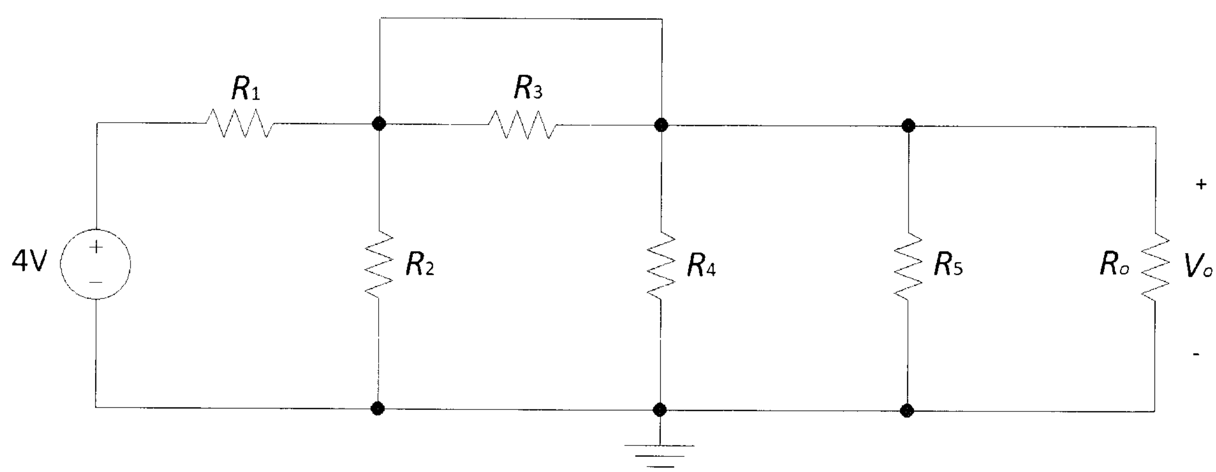
$$I_T = \frac{V_{Th}}{R_{Th} + R_o} = \frac{3.416\,V}{1.926k\Omega + 1k\Omega} = 1.167\,mA$$

Then the power dissipated in R_o can be calculated as follows:

$$P = {I_T}^2 R_o = (1.167\,mA)^2 \cdot 1k\Omega = 1.362\,mW$$

Experiment:

i. Given the following circuit, and that $R_1 = 220\Omega$, $R_2 = R_5 = 10k\Omega$, $R_3 = 100k\Omega$, $R_4 = 1k\Omega$, build the circuit and measure the required values to generate the Thevenin equivalent circuit at R_o. Draw the Thevenin equivalent circuit using your measured values and include it in your report. ***Note: Do not disassemble the circuit, it will be used again in part vi.***



ii. Using the same circuit from part i, generate the Norton equivalent circuit at R_o. Draw the Norton equivalent circuit using your measured values and include it in your report.

iii. What value of R_o would allow for maximum power transfer in this circuit, and why?

iv. Calculate the maximum power transfer in the circuit using the value determined in part iii.

v. Compute the theoretical values for the Thevenin equivalence of the circuit from part i to confirm the measured values from part i.

vi. Given $R_o = 1\text{k}\Omega$, plot V_o for the original circuit from part I on channel 1 of the oscilloscope on the Analog Discovery 2. Proceed to build the Thevenin equivalent circuit using the closest resistor to R_{Th}. Plot V_o on channel 2 of the oscilloscope using the same R_o and compare to V_o measured from the original circuit. Include a screenshot of the oscilloscope showing channel 1 and 2 in your report.