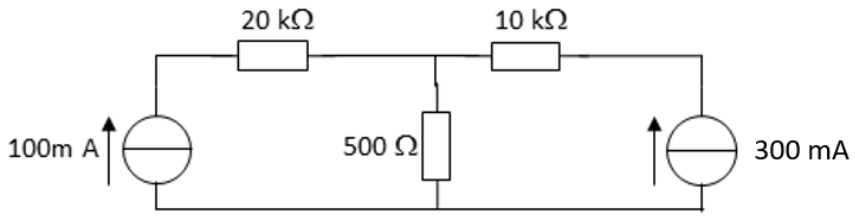
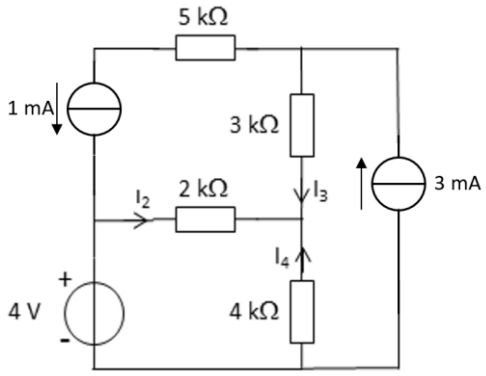
Home Assignment 2, IE1206 & IF1330, VT2020

Problem 1



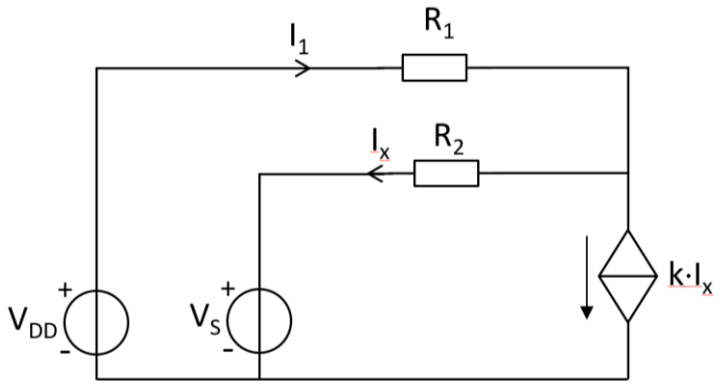
Determine the total electric energy [J] converted into heat during 1 hour of operation of the circuit.

Problem 2



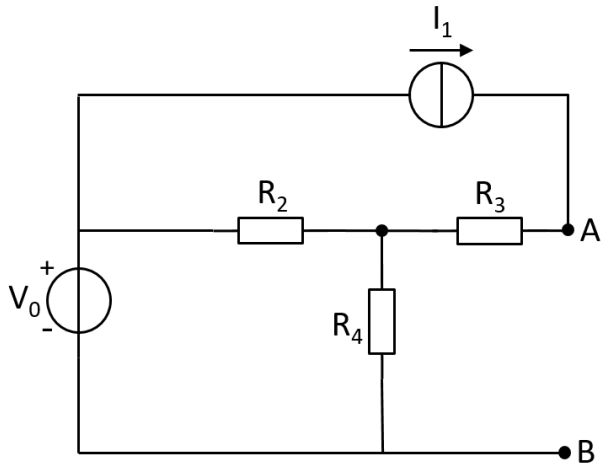
Determine I_2, I_3, and I_4.

Problem 3



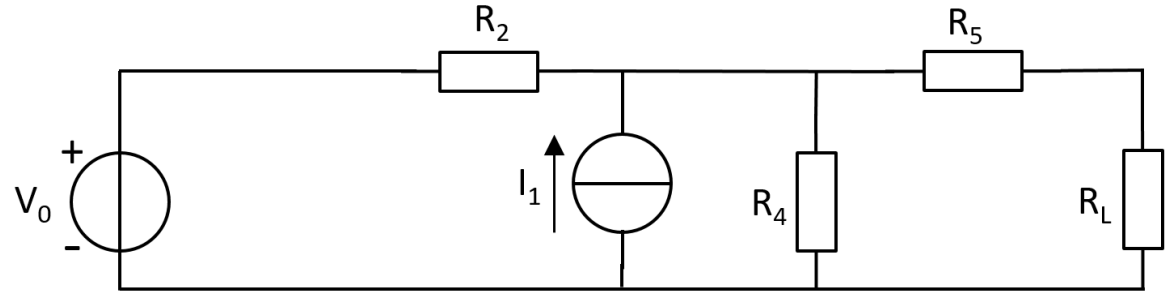
Find an expression for I_1 as a function of V_{DD}, V_S, R_1, R_2 and k.

Problem 4



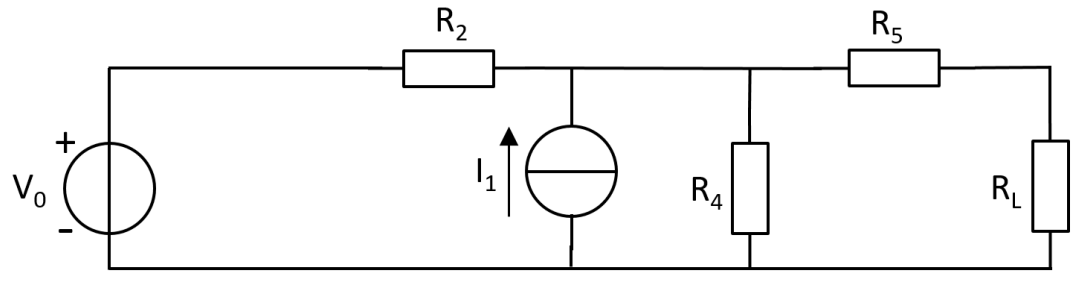
Determine the Thévenin equivalent circuit seen at terminals A and B.
V_0=22 V, I_1=3 mA, R_2=2 kΩ, R_3=6 kΩ, R_4=4 kΩ

Problem 5



What is the Thévenin equivalent circuit seen by the resistor R_L?
V_0=10 V, R_2=5 kΩ, R_4=5 kΩ, R_5=7,5 kΩ, I_1=2 mΩ

Problem 6



V_0=10 V, R_2=5 kΩ, R_4=5 kΩ, R_5=7,5 kΩ, I_1=2 mΩ
Determine R_L so that maximum power is consumed in R_L. How much power is consumed in R_L then?