Name:

ID :

PRINCIPLES OF EE1

Homework #3

Submission deadline: **October 23, 2024**

IMPORTANT: You should write on **A4 paper** that contains a full and detailed description of all the work done on the homework. Then you must submit the test hand-written by scanning and uploading the file in **pdf** form on Blackboard (Assignment Session). Marks will be deducted if there are sign of violation of regulation and late submission (20% for each day).

Tip: You draw a bounding box or highlight for your final answer. Ex: Y = ABC + AC = $\boxed{ABC}$

Problem 1: (25 marks)

Find the Thevenin equivalent with respect to the terminals a, b for the circuit in Figure 1.

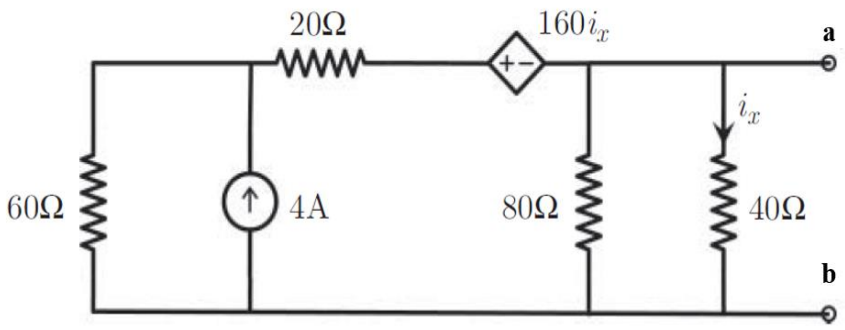

Figure 1

Problem 2: **(25 marks)**

Use the principle of superposition to find the voltage v and the power dissipated in the 10Ω in the circuit of Figure 2.

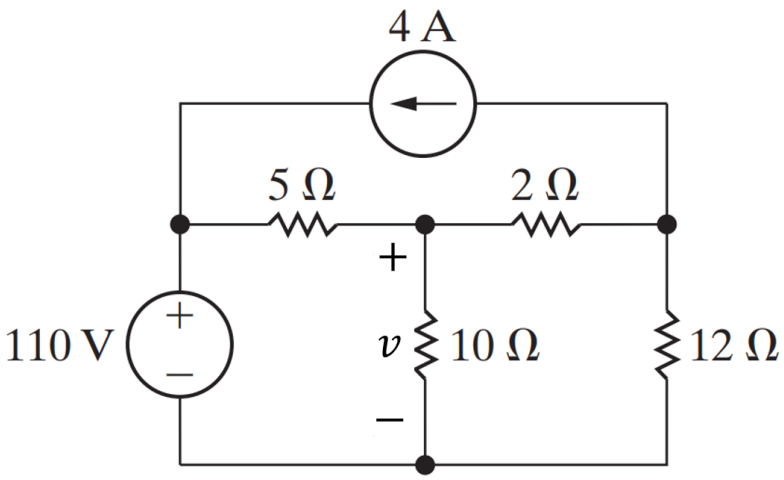

Figure 2.

Problem 3: **(25 marks)**

Determine the value of R_0 to maximize the power transfer in the Figure 3. Then, calculate the maximum power.

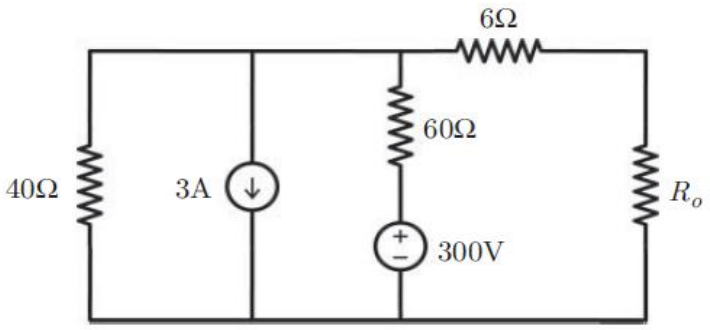

Figure 3

Problem 4: **(25 marks)**

Find the Norton equivalent circuit for the portion of the network to the left of a-b.

Hint: *apply superposition for two sources.*

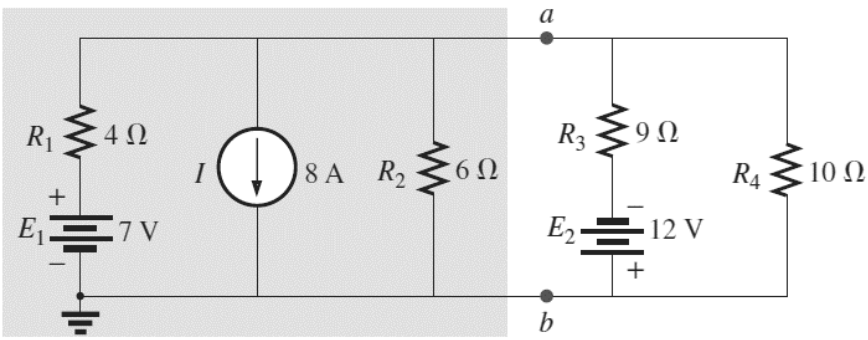

Figure 4