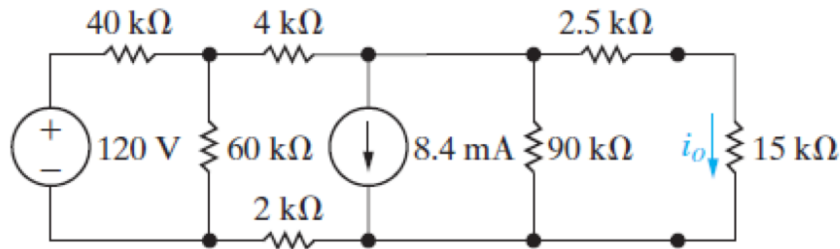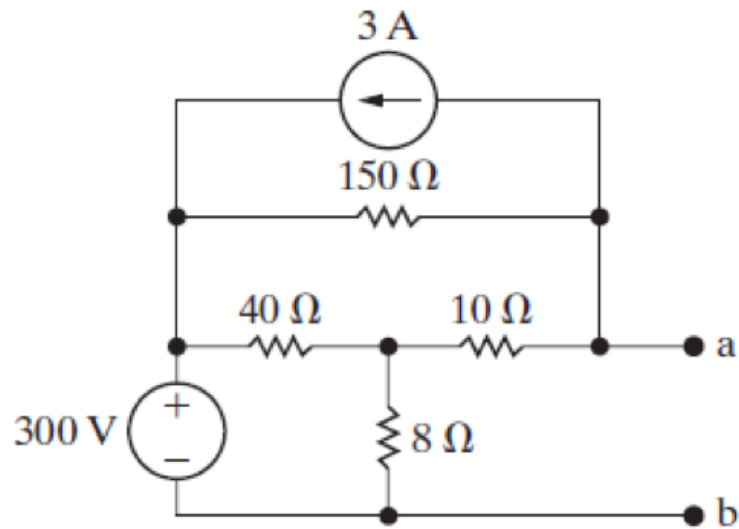**Question 1** [10]

(i) Using several source transformations find the value of the current flowing through the 15 $k\Omega$ resistor. [Hint: start on the left side of the circuit and work your way right.]

(ii) Now that you know this current, work backwards through the original circuit and calculate the following: the voltage drop across the 90 $k\Omega$ and the current flowing through that branch; the current flowing through the 4 $k\Omega$ resistor, the voltage drop across the 60 $k\Omega$ resistor; and the current flowing in the left-hand part of the circuit.

Question 2 [10]

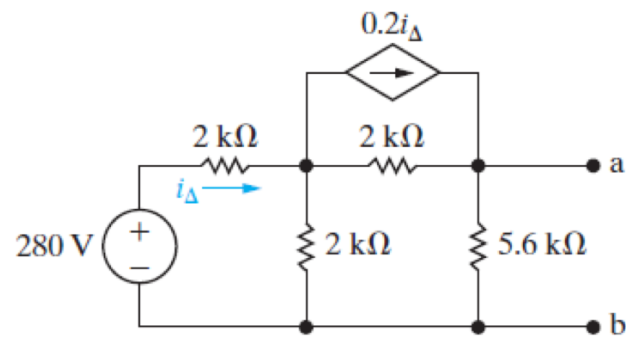Find the Thévenin equivalent for the following circuit. [Hint: start off by making a source transformation then apply the mesh-current method.]

Question 3 [10]

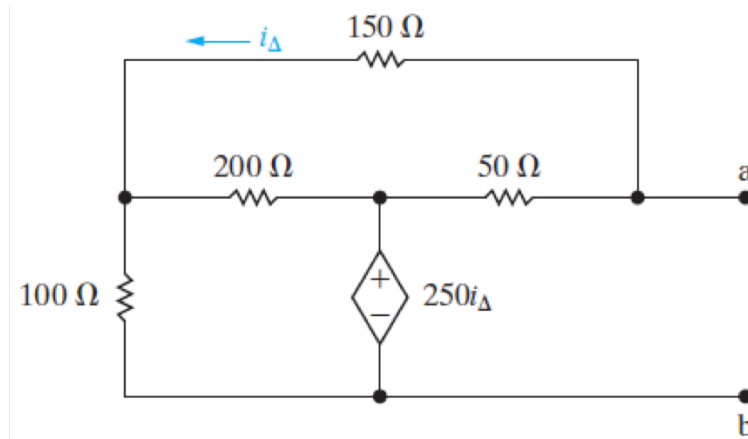Find the Norton equivalent for the following circuit. [Hint: apply the node-voltage and mesh-current methods.]

Question 4 [10]

Use the test source method to find the Thévenin resistance. [Hint: use the node-voltage method.]

Question 5 [10]

Use the principle of superposition to find the voltage v_o. [Hint: when you analyze the current source, apply the node voltage method choosing the reference node as the node below the 40 Ω resistor.]