Homework #4
Due Tu. 10/09

1. (Hambley P2.84)

   Find the Thevenin and Norton equivalent circuits for the circuit shown in Fig. P2.84. Take care that you orient the polarity of the voltage source and the direction of the current source correctly relative to the terminals a and b. What effect does the $7\,\Omega$ resistor have on the equivalent circuits? Explain your answer?

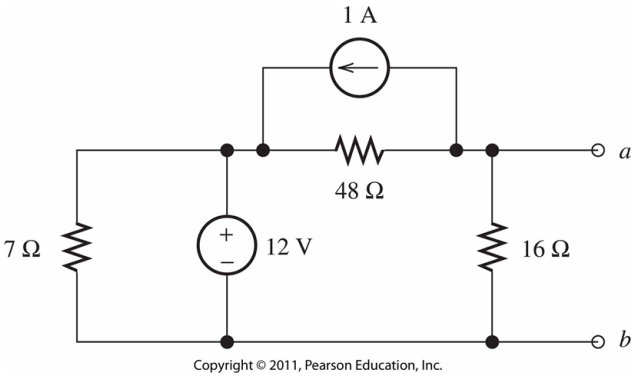

Figure P2.84

2. (Hambley P2.88)

   Find the Thevenin and Norton equivalent circuits for the circuit shown in Fig. P2.88.

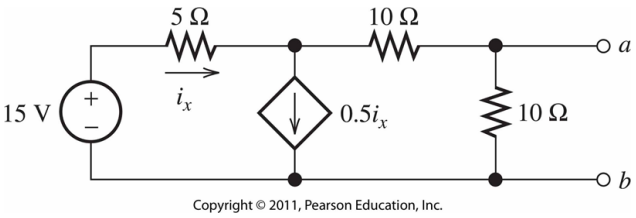

Figure P2.88

3. (Hambley P10.6)

   Sketch i versus v to scale for the circuits shown in Fig. P10.6. The reverse-breakdown voltages of the Zener diodes are shown. Assume voltages of 0.6 V for all diodes including the Zener diodes when current flows in the forward direction.

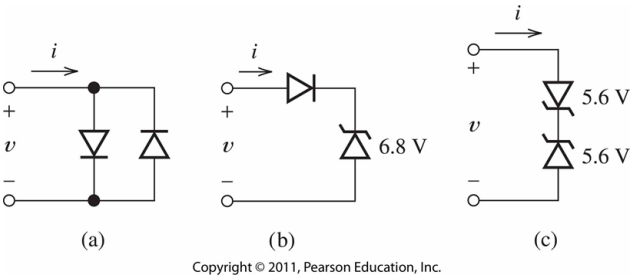

Figure P10.6

4. (Hambley P10.35)

   (a) Two ideal diodes are placed in series, pointing in opposite diretions. What is the equivalent circuit for the combination?

   (b) What is the equivalent circuit if the diodes are in parallel and pointing in the opposite directions?

5. (Hambley P10.39)

   Sketch i versus v to scale for each of the circuits shown in Fig. P10.39. Assume the diodes are ideal and allow v to range from $-10\,\text{V}$ to $10\,\text{V}$

6. (Hambley P10.48)

   The diode shown in Fig. P10.48 can be represented by the offset model of Fig. 10.23 on page 491, with $V_f = 0.7\,\text{V}$.

   (a) assume that the diode operates as an open circuit and solve for the node voltages v_1 and v_2. Are the results consistent with the model? Why or why not?

   (b) Repeat part (a), assuming that the diode operates as a 0.7 V voltage source.

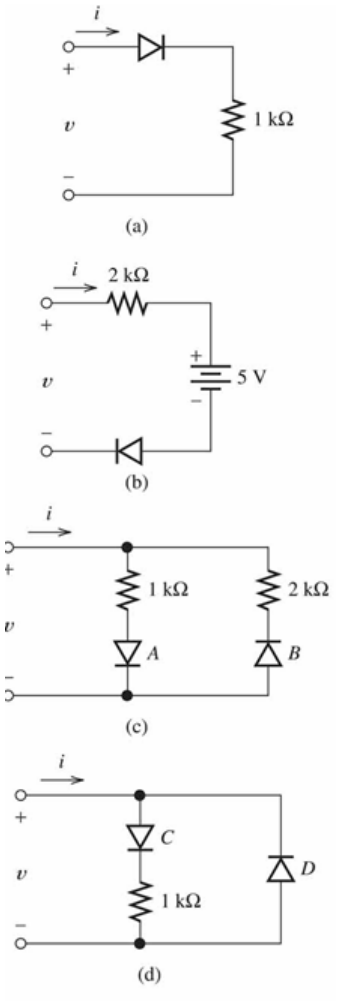

Figure P10.39

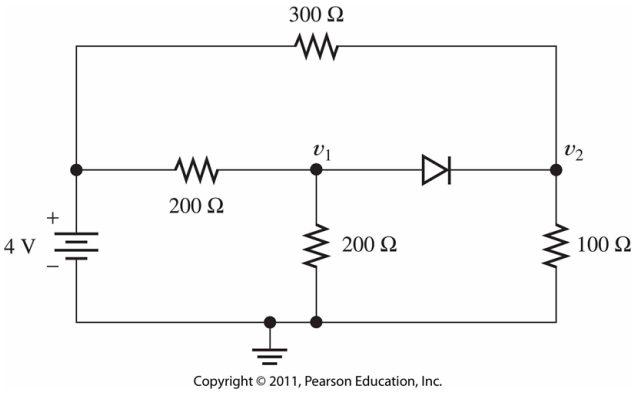

Figure P10.48