EE101
Tutorial 3 (23-AUG-2013)

1. For the circuit shown in Figure for Problem 1, what will be the state of the two diodes, D1 and D2? What will be the voltages V_A, V_B and the currents I_{D1} and I_{D2}?
Show that the other states of the two diodes will not be acceptable. Assume that a diode has a forward bias voltage of 0.7 V when it is conducting (i.e. when it is ON).

2. Sketch the transfer characteristics of the given circuit in Figure for Problem 2, assuming that the cut-in voltage of the diodes is 0.5 V and their voltage drop is 0.7 V for conducting current $i_D \geq 1\text{mA}$

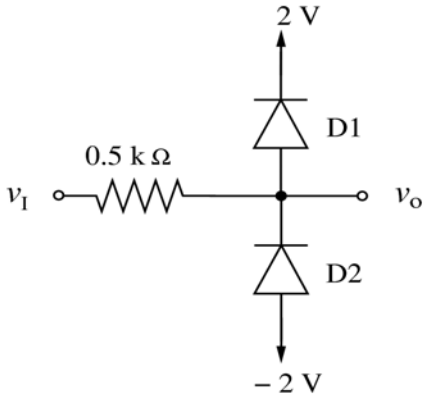

Figure for Problem 2

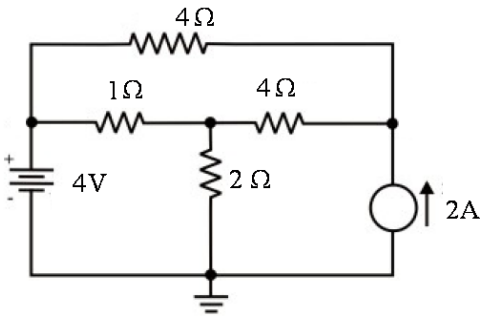

Figure for Problem 4

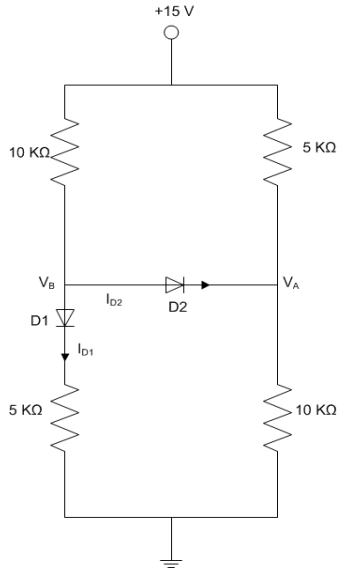

Figure for Problem 1

3.

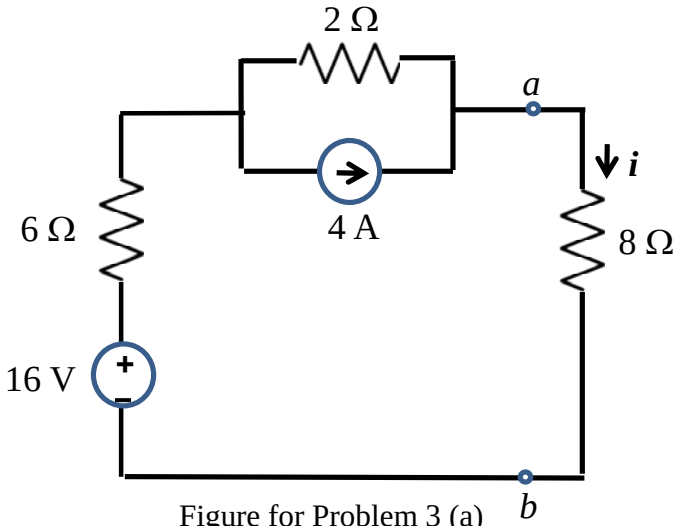

Figure for Problem 3 (a)

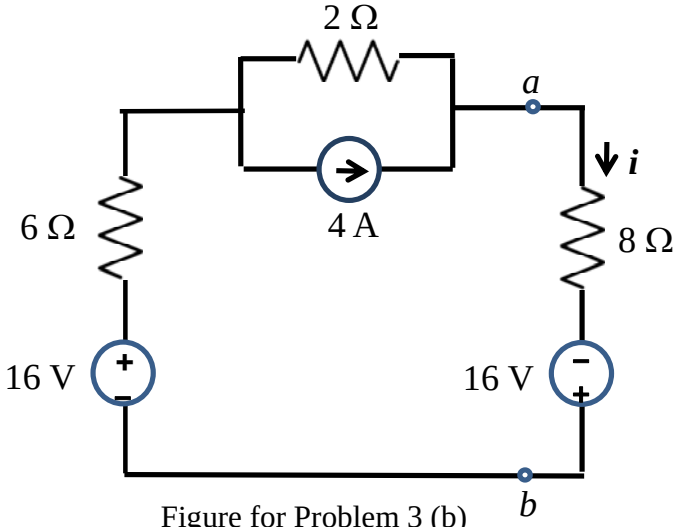

Figure for Problem 3 (b)

(a) For the circuit shown in Figure for Problem 3 (a), find the Thevenis's equivalent across terminals *a*-*b*, and therefore find the current *i* through the 8 Ω resistor.
(b) If 16 V source were added in series with the 8 Ω resistor as shown in Figure for Problem 3 (b), use superposition theorem to find the current through the resistor.

4. For the circuit shown in Figure for Problem 4, apply Norton's theorem to find the current though the 1Ω resistance