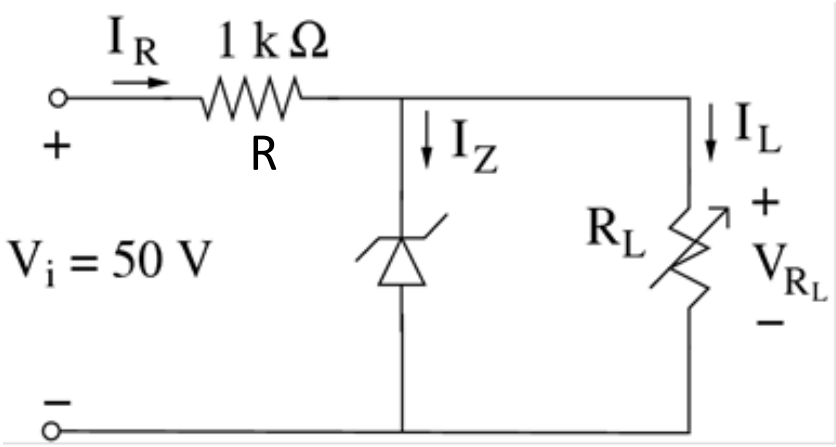
EE101
Tutorial-1 (07 Aug 2014)

Q1.	A Si diode operating at 27°C having the ideality factor of 1 is forward biased by a voltage of 0.8 V. If the operating temperature changes to 47 °C, what voltage should now be applied across the diode so that the current through the diode remains constant? [Given that Boltzmann's constant $k = 1.38 \times 10^{-23}$ J/K and the magnitude of electronic charge $q = 1.6 \times 10^{-19}$ C]
Q2.	For the network shown below, determine the range of R_L and I_L that will result in the load voltage V_{R_L} being maintained at 10 V. The Zener diode in the circuit has a breakdown voltage of 10 V and the maximum wattage rating of 320 mW. Assume that the minimum current required to maintain the Zener action is zero. 
Q3.	For the circuit shown below, sketch the voltage developed across the resistance R_3 and also determine the dc voltage available at R_3. Assume that the diodes are ideal.