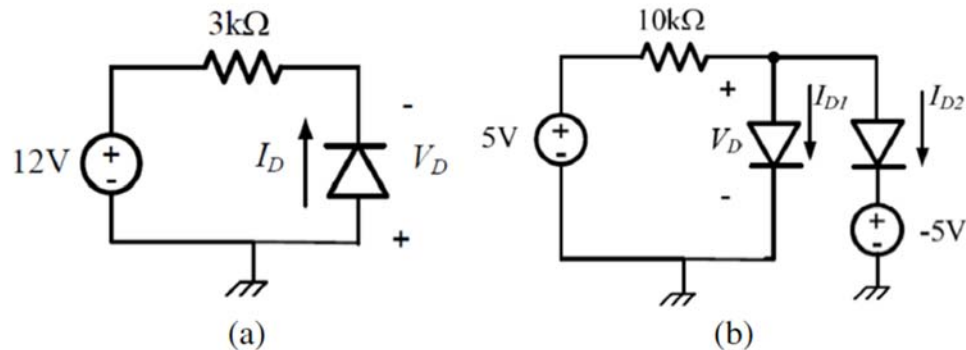


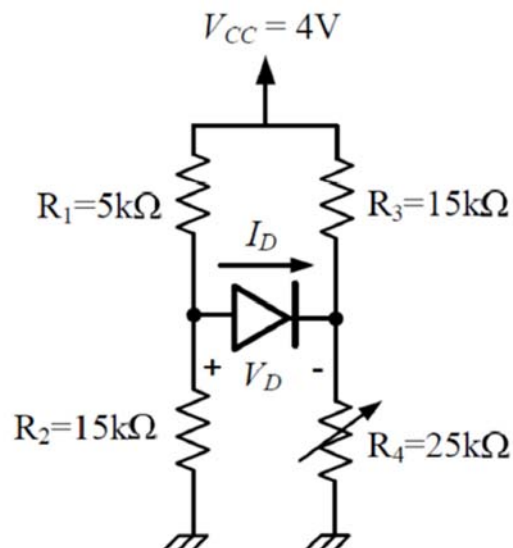
1. For the circuit shown below, find the values of the labeled voltages and currents. Use the constant-voltage-drop diode model with  $V_{D0} = 0.6V$ .

Note: Pay attention to the orientation of voltages and currents in each case.



- 2.
- Assuming that the diode in the circuit shown below is ideal, find the values of diode current and voltage, as labeled. Find the maximum value of resistor  $R_4$  for which the diode is conducting.
  - Repeat part (a) if the diode is modeled using the constant-voltage-drop diode model with  $V_{D0} = 0.7V$ .

Hint: Use Thevenin's theorem to find the equivalent circuit seen by the diode. The equivalent circuit found in part (a) can still be used in part (b).



3. Consider the circuit shown below, with  $V_B = 0.8V$ . Assume the constant-voltage-drop model of  $V_{D0} = 0.7V$  for the diode. If  $v_i = A\cos(\omega_0 t)$ , where  $A = 2V$ , do the following:
- Plot the transfer characteristic of the circuit ( $v_i$  vs  $v_o$ );
  - Sketch  $v_i(t)$  and  $v_o(t)$  for one period of the cosine function (draw them on the same plot).

