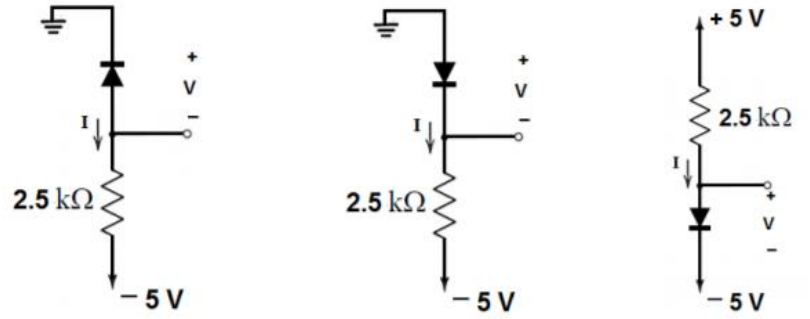
19EEE114 Electronic Circuits

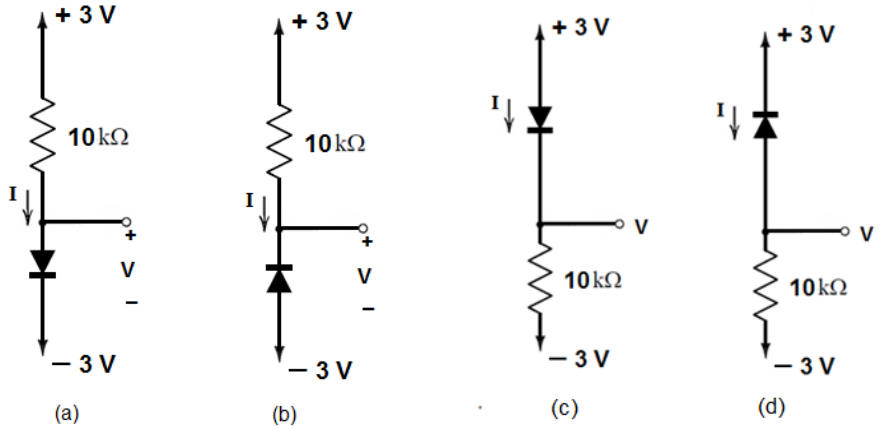
Assignment #1 **Due Date: 01st April 2022**

PN Junction Diode

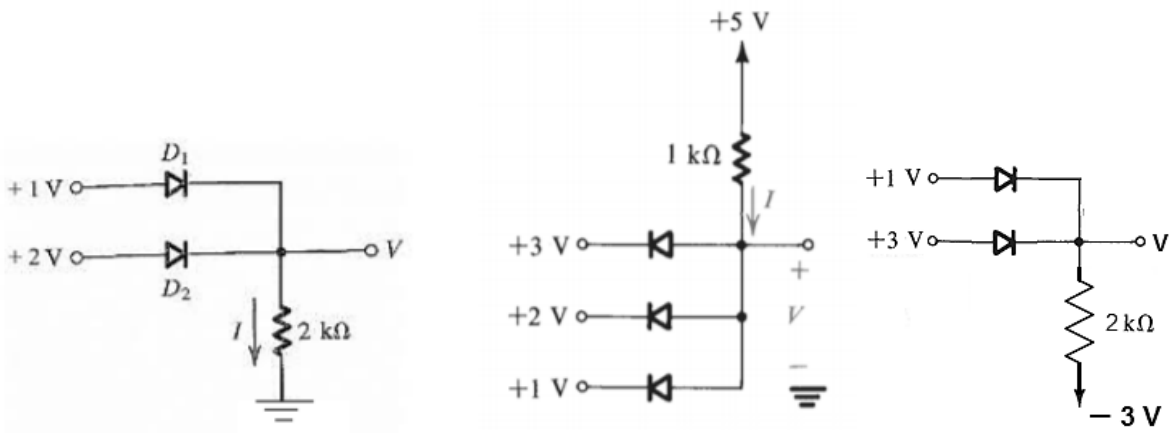
Q1. Find the values of I and V in the circuits shown below. Assume diodes to be ideal.



Q2. For the circuits shown using ideal diodes find the values of voltage and current.



Q3. Determine I and V. Assume diodes to be ideal.



Q4. Consider a silicon diode with $\eta = 1.5$. Find the change in voltage if the current changes from 0.1 mA to 10 mA.

Q5. A silicon junction diode with $\eta=1$ has $v = 0.7$ V at $i = 1$mA. Find the voltage drop at $i = 0.1$mA.

Q6. Find the value of the diode small-signal resistance r_d at bias current of 10 mA. Assume $\eta=1$.

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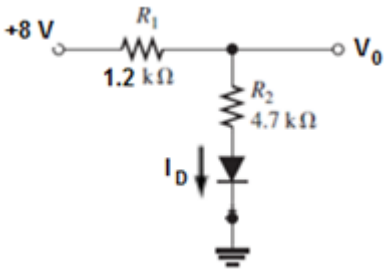
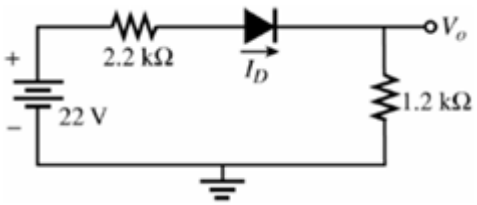
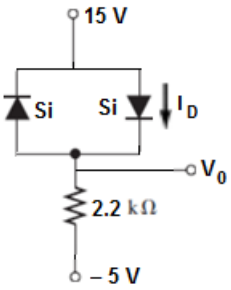
Q7. Determine I_D and V_0 for the following circuit.



(a)

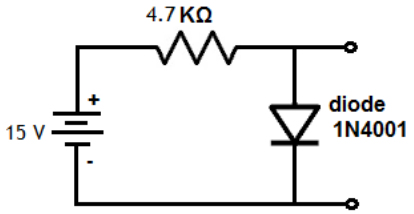


(b)



(c)

Q8. A silicon diode is used in the circuit as shown. Calculate the diode current.



Q9. Determine the current I_D and the diode voltage V_D for the circuit shown with V_{DD} = 5 V and R = 1 kΩ. Assume that the diode has a current of 1 mA at a voltage of 0.7 V.