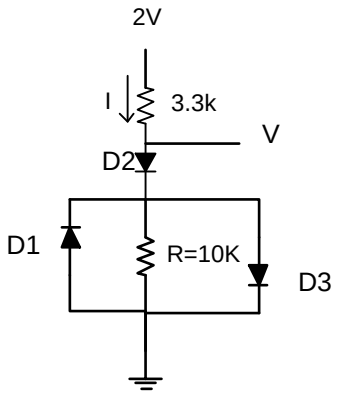
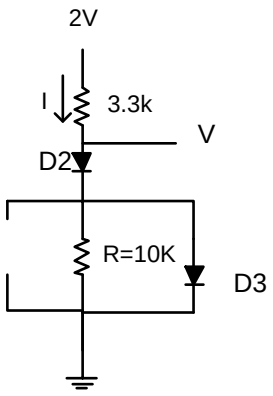
Diode DC Analysis Rules:

Rule1: If diodes (connected in series or in parallel) and resistors are in series then V_P-V_N rule can be applied to determine the conduction states of the diodes.

Rule 2: If there is single DC voltage source and more than one diode in the circuit, if any diode appears to be reverse biased (applying V_P-V_N rule) then it must be reverse biased. Replace the diode with open circuit.



Circuit 1.



Circuit 2

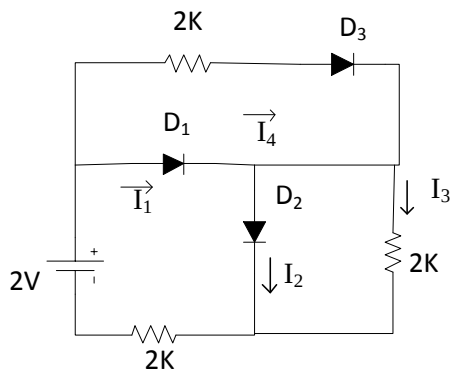
In Circuit 1, there is one voltage source V=2V and after applying VP-VN rule it looks like D1 appears to be reverse biased. Therefore D1 must be OFF and replaced with open circuit.

Rule 3: If in a diode circuit there is/are (see Circuit 2)

- single voltage source.
- More than one diode.
- At least one diode is in parallel to any resistance.

Then don't apply V_P-V_N rule to determine the conduction states of the diode. Instead solve the circuit using Assumption rule.

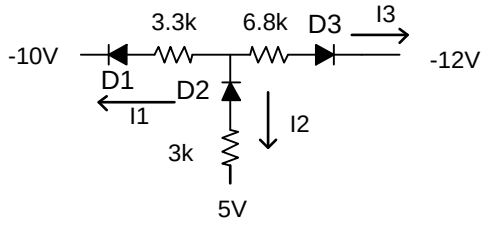
- Assume all the diodes are ON.
- Determine the currents through all the diodes.
- If you find current through at least one diode is flowing from N-to-P, then the assumption is wrong.
- If the current through a diode is flowing from P-to-N, then this diode is ON, but if the current through any diode is flowing from N-to-P, then the corresponding diode must be OFF.



Rule 4: Multiple diode problem (Diode DC circuit with multiple diode and multiple voltage source)

- Assume all the diodes are ON.
- Determine the currents through all the diodes.
- If you find current through at least one diode is flowing from N-to-P, then the assumption is wrong.
- If the current through a diode is flowing from P-to-N, then this diode is ON, but if the current through any diode is flowing from N-to-P, then the corresponding diode must be OFF.

If the assumption is wrong, eliminate the diode that is OFF and solve the circuit again with the remaining ON diode.



Rule 5: Diode OFF assumption. Assume a particular diode in a circuit is OFF. Replace the diode with open circuit. Determine the voltage across the diode (V_P-V_N). IF V_P-V_N<0.7V, assumption is right, if V_P-V_N>0.7V assumption is wrong, replace the diode with 0.7V.