Laboratory 1: Zener Diodes

written by: M. Rao

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Zener diode for voltage regulator

Zener diode is always operated in reverse bias mode. In forward bias conditions, it acts like normal diode. It has a region where it throws same voltage regardless of the current supplied across the diode. This can be used to regulate or stabilize a voltage source against supply or load variations. Connect the circuit as shown in Figure 1. Vary the input voltage starting from 0 to 10 V in steps of 1 V each. For each value of input voltage (V_{in}), measure the output voltage. Draw the transfer characteristics of output versus input voltage. Note that the diode is incorrectly written as 15V breakdown voltage. We will be using 3V zener diode.

Now connect the Full wave rectification (Bridge configuration) with Zener diode and other components as shown in the Figure 2. Capture and plot the input signal and output signal with respect to time domain in your lab report. This circuit shows an application of voltage regulation from AC mains. Most of your mobile adapters/charges is made up of this circuit.

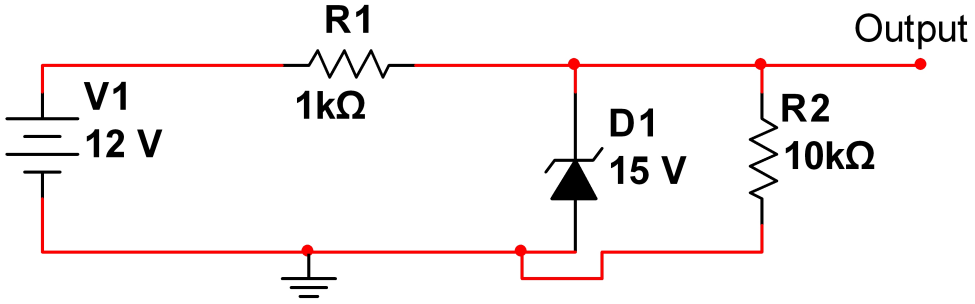

Figure 1: Schematic representation of zener diode in a circuit.

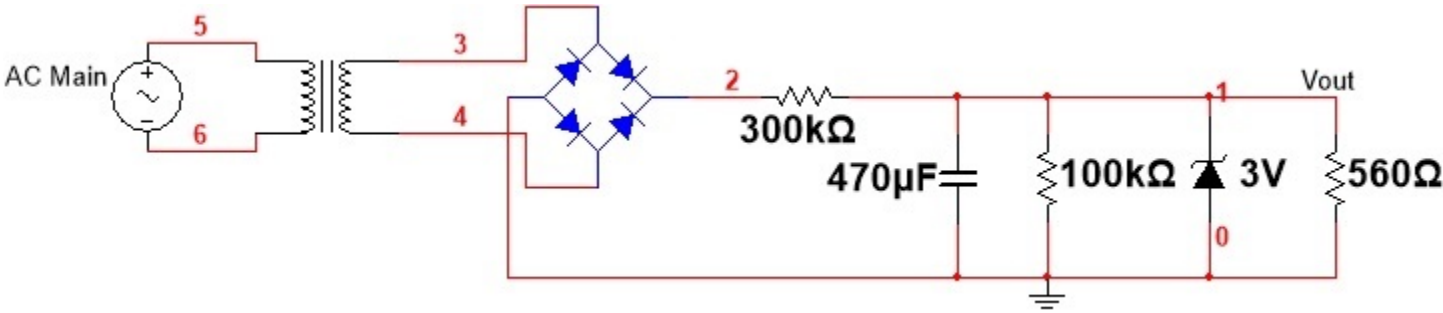

Figure 2: Schematic representation of zener diode in a rectification.