



# East West University

## Department of CSE

<b>Course Name:</b> CSE251 Electronic Circuit	
<b>Course Code:</b> CSE251 <b>Section:</b> 04	
<b>Project Name:</b> Design a 5V DC Power Supply Using Diode for a Specified Input.	
<b>Semester and Year:</b> Spring 2021	<b>Group NO:</b> 07
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<b>Date of Report Submission:</b> 24.05.21	

## PROJECT REPORT

## Problem Statement:

Design a 5 V DC power supply from a sinusoidal wave. We have to produce the final output using three design steps: a diode rectifier, a filter, and a voltage regulator.

## Design Details:

There is a 24 V peak to peak sinusoidal wave as input and we have to convert that input into a stable 5 V output. First, we have to convert the sinusoidal waveform to only positive cycle. For this we have used a bridge rectifier using 4 diodes (D1N4002). This was our diode rectifier part.

Then we have added a high value capacitor in parallel with the bridge rectifier to reduce the variations in the magnitude of the rectifier output. We have used a 12 micro farad capacitor so that the ripple will be very small (0.3 V).

To reduce the remaining ripple and to produce a constant voltage in the output we have used a Zener diode (D1N4733) in reverse biased mode. We have set the value of Zener diode breakdown voltage as 5.1 V so that we can get a regulated 5 V output.

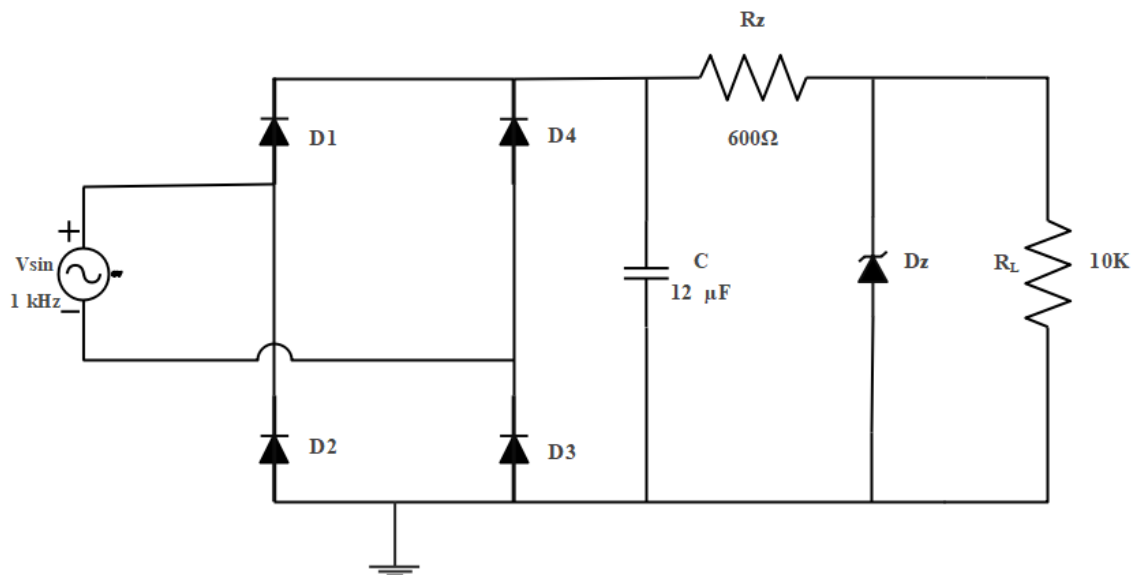


Figure 1: Circuit diagram

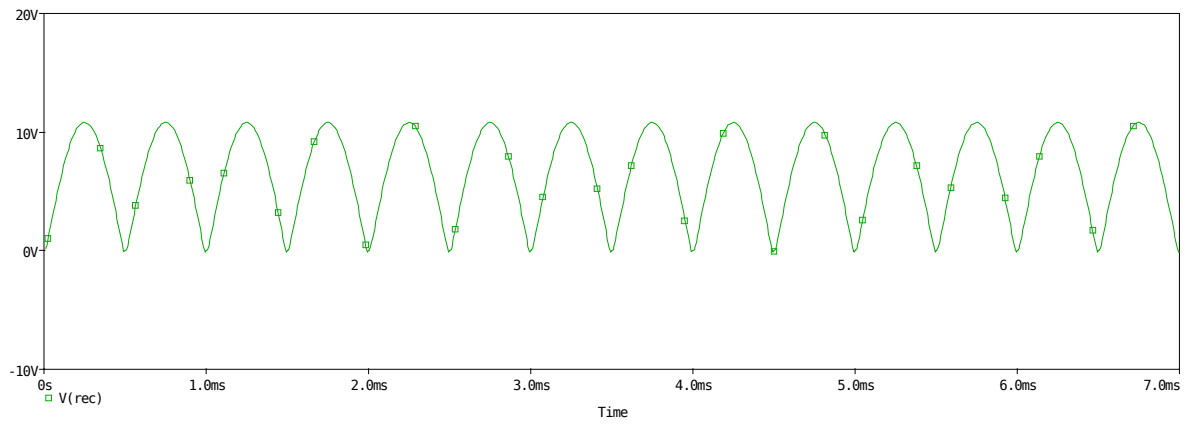


Figure 2: Diode rectifier output plot

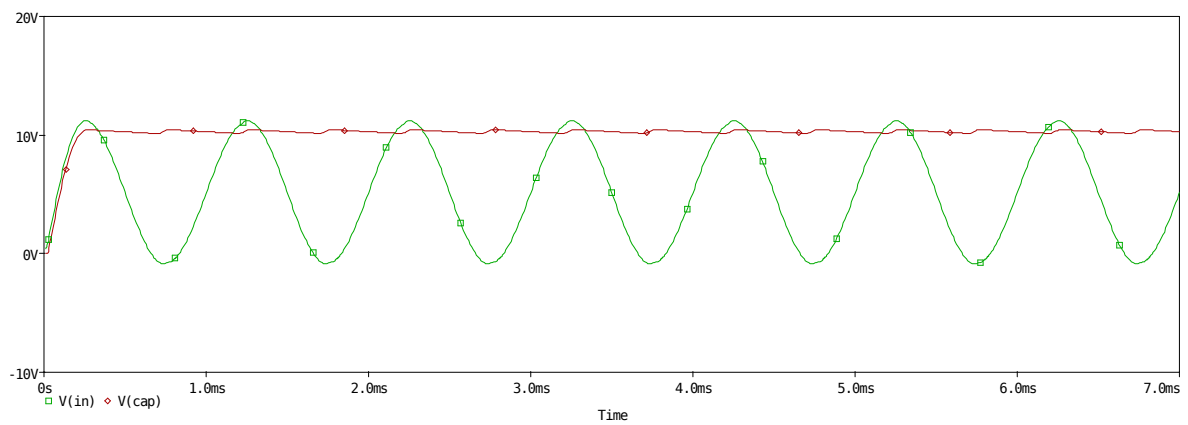


Figure 3: Input vs filtered output plot

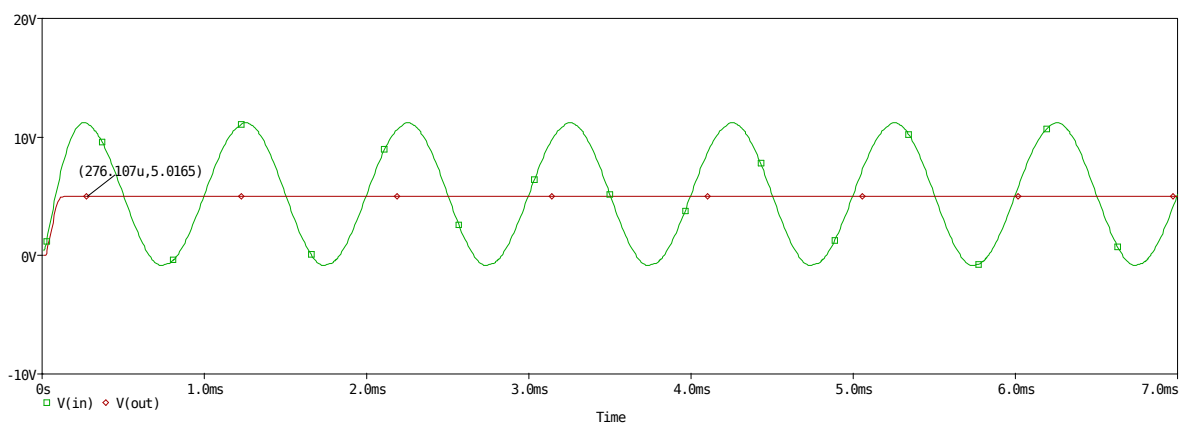


Figure 4: Input vs regulated output plot.

## Reference

1. [https://www.electronics-tutorials.ws/diode/diode\\_6.html](https://www.electronics-tutorials.ws/diode/diode_6.html)