EECS 2210: Lab 1: Rectifier **Names:**

Session

OBJECTIVES

In this lab, the students will learn the operation of half and full wave rectifiers.

INTRODUCTION

The students will assemble and characterized the following circuits.

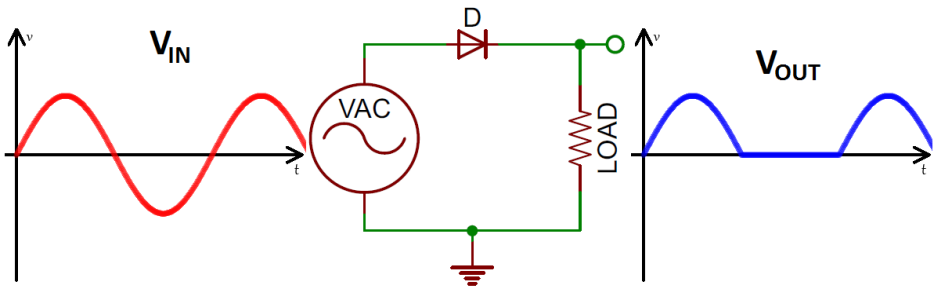

Figure 1. Half wave rectifier

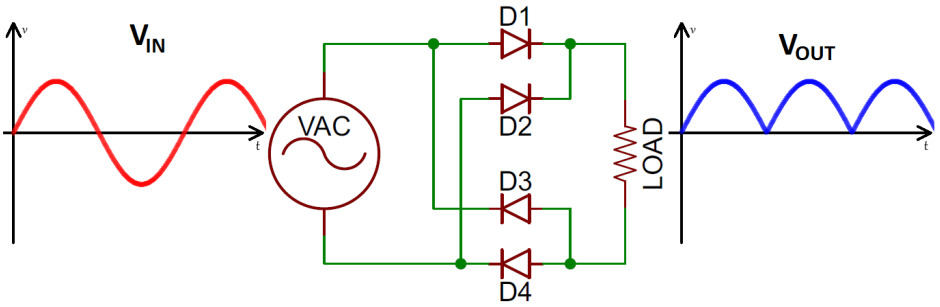

Figure 2. Full wave rectifier

PERLAB

Prior to the lab, the students should:

- Read lecture 3 and text book in order to understand the operation of circuit 1 and 2.
- Read the data sheet of Diode 1N4148
- Read the general manual of electrical/electronic circuit.

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EXPERIMENT

Requirement:

In this lab, the following elements and instruments will be used.

1. Elements
    a. D1=D2=D3=D4 = 1N4148 DIODE
    b. R_{Load}=100 ohm
2. Instruments:
    a. Signal generator
    b. Oscilloscope

Instruction:

Part 1

1. Use a bread board and assemble the circuit 1
2. Connect the signal generator to the circuit as seen in Figure 1.
3. Use channels 1 and 2 to show the input and output voltage of rectifier shown in Figure 1.
4. Select a sine wave signal with an amplitude = 10 volts and frequency = 500Hz
5. Take a photo of the screen of oscilloscope and add in this part.
   -----INSERT PHOTO HERE--------
6. Decrease the amplitude of input voltage and obtain the minimum voltage A, so that the rectifier still operates properly. Take a photo of the screen of oscilloscope and add in this part.

   A_{Min}= ?

   ----------INSERT PHOTO HERE--------

Part 2

1. Use a bread board and assemble the circuit shown in Figure 2.
2. Connect the signal generator to the circuit as shown in Figure 2.
3. Use channels 1 and 2 to show the input and output voltage of rectifier shown in Figure 2.
4. Select a sine wave signal with an amplitude = 10 volt and frequency = 500Hz
5. Take a photo of the screen of oscilloscope and add in this part.
   -----INSERT PHOTO HERE--------
6. Decrease the amplitude of input voltage and obtain the minimum voltage A, so that the rectifier still operates properly. Take a photo of the screen of oscilloscope and add in this part.

   A_{Min}=?

   ----------INSERT PHOTO HERE--------

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ANALYSIS

1. As per your experiment in part 1, by assuming the input and output voltage amplitudes are A and B,
   A-B =?
   What is the reason of this difference?
2. As per your experiment in part 2, by assuming the input and output voltage amplitudes are A and B,
   A-B =?
   What is the reason of this difference?

REPORT:

1. Call the TA to confirm the completion of your experiment
2. Email the results using the computer of the Lab before leaving the lab.