

**Institute of Engineering and Technology**

**Sitapur Road, Lucknow-226021**

**Electronics and Communication Engineering Department**

**Name of Lab:** Electronics Engineering Lab

**Subject code:** KEC 151P

**Branch:** Civil Engineering 1st Year

**List Of Experiments**

1. Study of Lab Equipments and Components: CRO, Multimeter, and Function Generator, Power supply- Active, Passive Components and Bread Board.
2. P-N Junction diode: Characteristics of PN Junction diode - Static and dynamic resistance measurement from graph.
3. Applications of PN Junction diode: Half & Full wave rectifier- Measurement of Vrms, Vdc, and ripple factor.
4. Characteristics of Zener diode: V-I characteristics of zener diode, Graphical measurement of forward and reverse resistance.
5. Characteristic of BJT: BJT in CE configuration.
6. To study Operational Amplifier as Adder and Subtractor
7. Verification of Truth Table of Various Logic Gate.
8. Implementation of the given Boolean function using logic gates in both SOP and POS forms.

**Sample Experiment**

**Theory**

**Objectives:**

At the end of the module the student would be able to

1. Explain Rectification
2. Explain Half Wave Rectification
3. Explain Half Wave Rectification: For Positive Half Cycle
4. Explain Half Wave Rectification: For Negative Half Cycle

**Rectification**



## Half Wave Rectifier

**INSTRUCTION**

1. Set the resistor  $R_L$ .
2. Click on 'ON' button to start the experiment.
3. Double click on 'Sine Wave' button to generate input waveform.
4. Click on 'Oscilloscope' button to get the rectified output.
5. Vary the Amplitude, Frequency, volt/div using the controllers.
6. Click on "Dual" button to observe both the waveform.
7. Channel 1 shows the input sine waveform, Channel 2 shows the output rectified waveform.
8. Calculate the Ripple Factor. Theoretical Ripple Factor= 1.21.
9. Note: Read the Virtual oscilloscope tutorial provided at the bottom.

**CIRCUIT**

Step 1:

**INSTRUCTION**

**OSCILLOSCOPE**

**CIRCUIT**

Ohms

**CONTROLS**

Step 2 & 3:

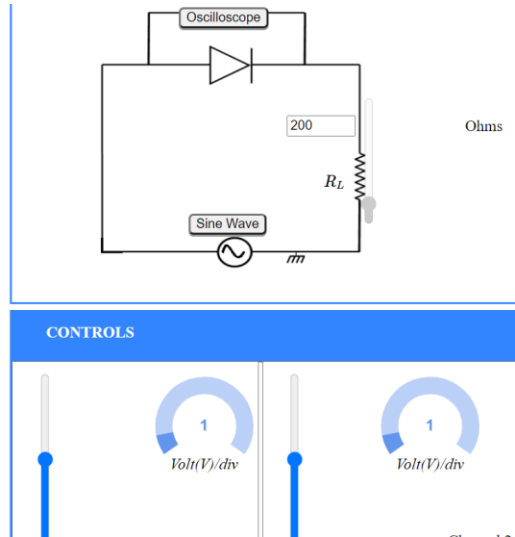
**OSCILLOSCOPE**


**CIRCUIT**

Ohms

**CONTROLS**

Step 4:



CALCULATION 

$V_{rms} = \frac{V_m}{2}$ ,  $V_m$  is the peak voltage

$V_{dc} = \frac{V_m}{\pi}$

Ripple Factor =  $\frac{V_{ac}}{V_{dc}}$  Since,  $V_{ac} = \sqrt{(V_{rms}^2 - V_{dc}^2)}$

Peak Current:  mA

**Result:** Half Wave rectification has been performed