

# IC161P Lab Report-1

Group-A3

Submitted by:

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**I. Introduction:-** The main aim of the experiment was -

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- To analyse and to make a half wave rectifier using a p-n junction diode
  - To analyse and make a full wave and peak rectifier
  - To Analyse Zener diode as voltage regulator
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**2. Materials Required:-**

- Bread Board
- Connecting Wires
- Diode
- Capacitor
- Resistor
- Power Sources AC and DC
- Multimeter
- Zener Diode

**3.Theory:-**

**Half wave rectifier**

The diode only conducts in forward bias and hence it can be used to convert ac voltage or rather ac ripples in dc ripples .half wave rectification means we use a pn junction diode in the ac circuit and it allows current to flow through it when it is in the forward bias and stops the current in reverse bias condition.

**Peak Rectifier:-**

In peak rectification technique we use a diode with a centre tap and a circuit as shown in the figure . The center tap helps to get a dc voltage but which is sinusoidal in nature . But in the process, the capacitor initially gets charged and discharges during the voltage drop and hence helps to maintain a constant voltage

**Zener Diode as voltage regulator:-**

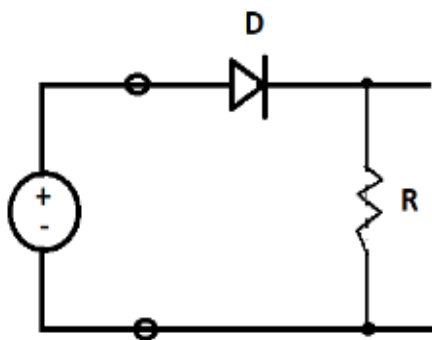
it is used as voltage regulator in reverse biased condition .in the breakdown region the change

in voltage with respect to the change in current is very less or negligible. A Zener diode with a negative bias is placed parallel to the load resistance. When the input voltage below the breakdown voltage, the Zener diode acts as an infinite resistance and all the current flows through the load. When the input resistance exceeds the permitted value, the Zener diode shorts the circuit, ensuring that no current flows through the resistance.

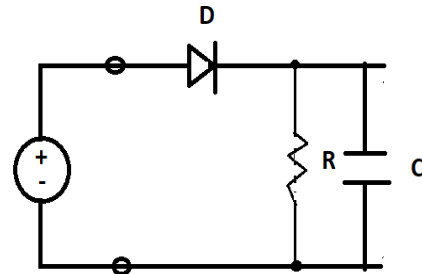
### 3.Circuit Diagrams

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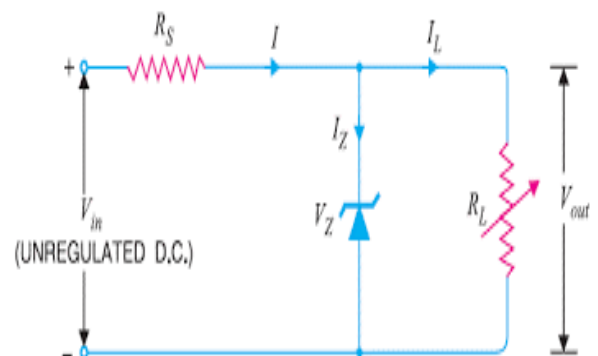
#### 1. Half Wave Rectifier



#### 2.Peak Rectifier

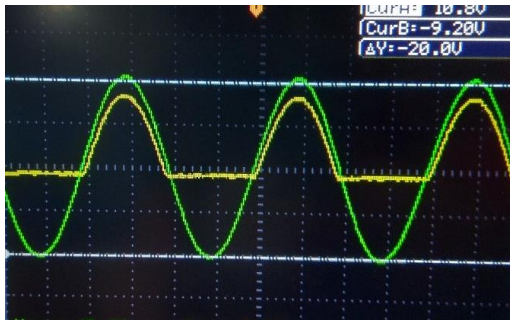
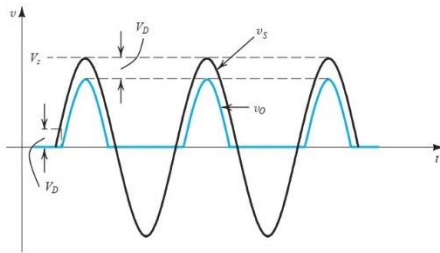


#### 3 Zener diode as a voltage regulator



## 4. Output graphs

### 1. Half Wave Rectifier



## 5. Conclusion and Inferences

- After this experiment we were able to make and observe the half wave rectifier and its working using pn diode.
- Also we were able to make peak rectifier and analyse its characteristics.
- We understood Zener diode working and how it is used as a voltage regulator.

### 2. Peak rectifier

