University of Information Technology and Sciences (UITS)
Department of Information Technology

Lab Report : 2

ECE-252 : Electronic Devices and Circuits Lab

Construction of Half wave and Full wave rectification circuit

Submitted To:

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Contents

1 Objective

The basic objective of this lab:
1. To know the basic uses of diode.
2. To know about Half wave and full wave rectification.
3. To know about the characteristic of half wave rectifier circuit and full wave rectifier circuit.
4. To design a circuit using diode and other electronic circuit.

2 Theory

2.1 Hlaf-Wave

A Half Wave Rectifier is a single PN junction diode connected in series to the load resistor. As you know a diode is to electric current like a one-way valve is to water, it allows electric current to flow in only one direction. This simple means the diode is operational when the diode is forward biased while it blocks the current when it is reversed biased. This property of the diode is very useful in creating simple rectifiers which are used to convert AC to DC. In Half wave rectification only the positive half cycle is obtained in output while the negative cycle is discarded

2.2 Full-Wave

The Bridge rectifier is a circuit, which converts an ac voltage to dc voltage using both half cycles of the input ac voltage. The circuit has four diodes connected to form a bridge. The ac input voltage is applied to the diagonally opposite ends of the bridge. The load resistance is connected between the other two ends of the bridge. For the positive half cycle of the input ac voltage, diodes D1 and D2 conduct, whereas diodes D3 and D4 remain in the OFF state. The conducting diodes will be in series with the load resistance RL and hence the load current flows through RL. For the negative half cycle of the input ac voltage, diodes D3 and D4 conduct whereas, D1 and D2 remain OFF. The conducting diodes D3 and D4 will be in series with the load resistance RL and hence the current flows through RL in the same direction as in the previous half cycle. Thus a bi-directional wave is converted into a unidirectional wave.

3 Apparatus List

SL no.	Name	Ratings	Quantity
1	Bread Board	—	1
2	Diode	1N4007	1+4
3	Resistor	1KΩ	1
4	AC Voltage Supplier	200V	1
5	Voltmeter for messing voltage	–	1
6	Ammeter for measuring current	–	1
7	Oscilloscope	–	1
8	Crocodile Clip	–	4
9	Connecting wire	–	2+2

Figure 1: Half-Wave

4 Diagram

4.1 Half-Wave

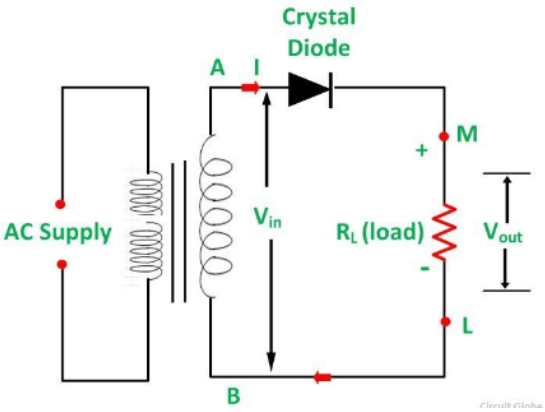

Figure 2: Half-Wave

4.2 Half-Wave Graph

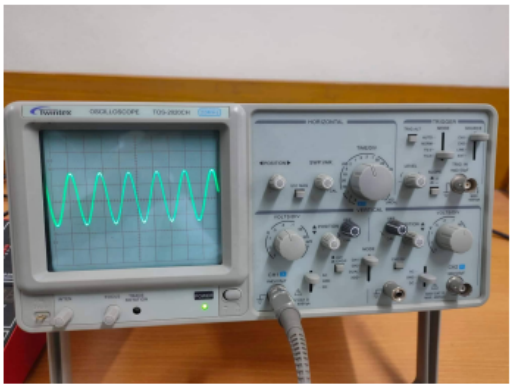

Figure 3: Half-Wave

4.3 Full-wave

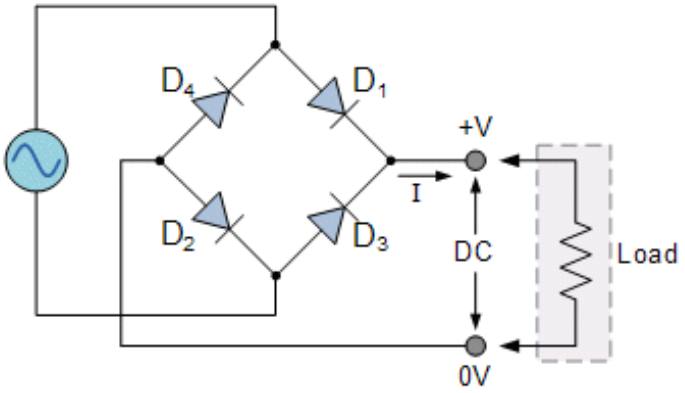

Figure 4: Full-Wave

4.4 Full-Wave Graph

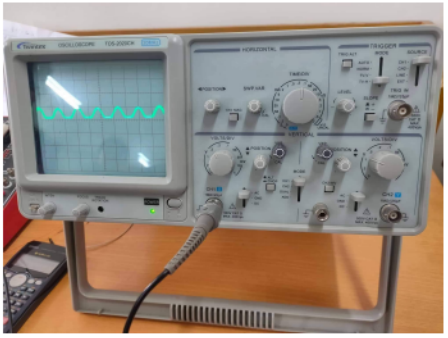

Figure 5: FUll-Wave

5 Data Table

5.1 Half-Wave

DC(V)	AC(V)	AC/DC	Vm	Vdc = Vm/π	Vrms = Vm/2
0.87	1.086	1.25	0.9	0.29	0.45

Figure 6: Output

5.2 Full-Wave

NULL-We didn't get any value of Fullwave rectifire.

6 Result

In half wave rectification we got the result only when the diode was in forward bias. We get 0 voltage on output when the diode is in reversed bias. That means we are throwing away the negative or blocked cycle of the waves. It means half wave is not so effective in AC to DC conversion. Vout = Vm -Vd Vdc/ Average of the output voltage will be 0.29. Vm is input voltage amplitude and Vdc is the voltage drop across diodes.

7 Conclusion

In this lab I have learnt about half wave and full wave and how they work and also check every component of them which use to complete this experiment. To conclude I can say that, when the input voltage is going through its positive half cycle, output voltage is almost the same as the input voltage and during the negative half cycle no voltage is available across the load. This explains the unidirectional pulsating dc waveform obtained as output. The process of removing one half the input signal to establish a dc level is aptly called half wave rectification. otherwise be incompatible.

8 References

https://www.studocu.com/row/document/university-of-engineering-and-technology-peshawar/electronic-devices-and-circuits/lab5-lab-report/10944603 2.ROHMhttps://www.rohm.com
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