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# <u>11.3 p – n Junction Diode</u>

A device made only of a p - n junction is a junction diode.

Draw the following instances.

•	How the p and n semiconductors are arranged	
	inside a junction diode.	
•	The symbol of a diode.	
•	+ and – terminals of a junction diode and the	
	direction of the current flow.	
٠	Typical appearance of a junction diode with +	
	and – terminals.	

All that is needed to operate the electronic devices is a direct current. For this, an alternating current has to be converted into a direct current using junction diodes. That process is rectification.

### • Demonstrate graphically

An alternating current	
A direct current	

# 11. 4. 1 Half – ware rectification.



Answer the following questions using the above circuit.

- 1. What is the action of the step down transformer applied to the circuit?
- 2. Is the current flowing through the diode in the direction of XLMY or in the direction of YMLX?
- 3. Summarize how the current flows through the R resister according to your answer.
- 4. What is the portion of the output current from the input current?

## 11. 4. 2 Full wave certification



Study the bridge circuit given above.

- See how the current flows through X and Y
- What is the current that must be supplied between X and Y for the current to flow through X and Y?
- What kind of current is received when 2 halves of that current (positive and negative) flow through the diode?
- Briefly write what a full wave rectification based on your answers.
- Graphically represent the current flowing through the input and output according to the above circuit diagram.



#### 11. 4. 3 Smoothness

What voltages are represented by the graphs below?



- In the case of II and III, it is shown that the current varies between zero and maximum.
- The electronic device that can be used to reduce the vibration is the .....
- Connecting a ...... to a rectifier circuit thus reducing the ...... variation is the smoothness.
- The circuit below shows how smoothing can be done.



- Here the capacitors that can be used for smoothing are mounted parallel to the terminals at the output.
- Draw the graphs before and after smoothing with such a rectifier circuit.

- Identify the difference between the graphs.
- Briefly explain how the difference occurs.
- Mention a possible action to increase the smoothness.
- A special case where a rectifier diode can be used is to present the damage caused when a device supplying energy after switching the + and terminals. What is the action of a diode for that.