

# 30 Lecture - PHY301

## Important Subjective

**What is the function of a diode in a circuit?**

**Answer:** A diode is a semiconductor device that allows current to flow in only one direction. Its primary function is to regulate the flow of electrical current in a circuit by allowing it to flow in only one direction.

**What is the difference between forward and reverse biasing of a diode?**

**Answer:** In forward biasing, the anode of the diode is connected to the positive terminal of the battery, and the cathode is connected to the negative terminal. In reverse biasing, the anode is connected to the negative terminal of the battery, and the cathode is connected to the positive terminal.

**What is the purpose of load line analysis in diode circuits?**

**Answer:** Load line analysis is used to determine the operating point of a diode in a circuit. It provides a graphical representation of the relationship between the diode voltage and current, and the circuit load resistance.

**What is the maximum forward voltage rating of a typical silicon diode?**

**Answer:** The maximum forward voltage rating of a typical silicon diode is around 0.7 volts.

**What is the knee voltage of a diode?**

**Answer:** The knee voltage of a diode is the voltage at which it begins to conduct current in the forward direction.

**How does the diode current vary with temperature?**

**Answer:** The diode current increases with temperature due to the increase in the number of charge carriers in the semiconductor material.

**What is the purpose of a diode clipper circuit?**

**Answer:** A diode clipper circuit is used to clip or limit the voltage waveform to a certain level by allowing only a portion of the waveform to pass through while blocking the rest.

**What is the difference between a half-wave and a full-wave rectifier circuit?**

**Answer:** A half-wave rectifier circuit only allows half of the AC waveform to pass through, while a full-wave rectifier circuit allows the entire waveform to pass through.

**What is the difference between a Zener diode and a regular diode?**

**Answer:** A Zener diode is designed to operate in the reverse breakdown region, while a regular diode is designed to operate in the forward conduction region.

**How does the capacitance of a diode vary with the reverse voltage applied across it?**

**Answer:** The capacitance of a diode decreases as the reverse voltage applied across it increases. This is due to the depletion region widening and reducing the available space for charge carriers, leading to a decrease in capacitance.