27 Lecture - PHY301

Important Subjective

What is intrinsic silicon?

Answer: Intrinsic silicon is a type of semiconductor material made from pure silicon atoms without any doping or impurities added to it.

What is the bandgap of intrinsic silicon?

Answer: The bandgap of intrinsic silicon is 1.12 eV.

How does intrinsic silicon conduct electricity?

Answer: Intrinsic silicon conducts electricity through the movement of free electrons and holes created by the excitation of electrons from the valence band to the conduction band.

What is the photoelectric effect, and how is it related to intrinsic silicon?

Answer: The photoelectric effect is the generation of a flow of electricity when light strikes the surface of a material. Intrinsic silicon can be used to make solar cells, which operate on the basis of the photoelectric effect.

How is intrinsic silicon different from doped silicon?

Answer: Intrinsic silicon is made from pure silicon atoms, while doped silicon has impurities added to it to alter its electronic properties.

What is the crystal structure of intrinsic silicon?

Answer: Intrinsic silicon has a crystalline structure, with its atoms arranged in a repeating pattern in a three-dimensional lattice.

What is the role of electrons in the electronic properties of intrinsic silicon?

Answer: The electrons in the lattice of intrinsic silicon are responsible for its electronic properties, including its ability to conduct electricity.

What are some electronic devices that use intrinsic silicon?

Answer: Transistors, diodes, and solar cells are some electronic devices that use intrinsic silicon.

What is p-type silicon, and how is it different from n-type silicon?

Answer: P-type silicon is created by doping intrinsic silicon with boron, which creates a surplus of holes in the valence band. N-type silicon is created by doping intrinsic silicon with phosphorus, which creates an excess of free electrons in the conduction band.

Why is intrinsic silicon an ideal semiconductor material?

Answer: Intrinsic silicon is an ideal semiconductor material because of its unique electronic properties, including its small bandgap and ability to conduct electricity through the movement of free electrons and holes.