Fundamentals of Electronics Devices

Unit-5

Lecture-1

Some Special Devices

- Photodiodes
- Photo detectors
- Solar cell
- Light emitting diodes
- Semiconductor lasers
- Light emitting materials
- Tunnel diode

Transferred electron mechanism

- GUNN diode
- P-N-P-N diode
- Semiconductor controlled rectifier (SCR)
- Bilateral devices: DIAC, TRIAC, IGBT

Introduction

- So far we have primarily concentrated on electronic devices.
- There is also a wide variety of very interesting and useful device functions involving the interaction of photons with semiconductors.

Microwave devices

- We have discussed a number of devices that are useful in microwave circuits, such as the varactor and specially designed high frequency transistors, which can provide amplification and other functions at microwave frequencies up to 10ˆ11 Hz.

Tunnel diodes

- Several important devices for high-frequency applications use the instabilities that occur in semiconductors.
- An important type of instability involves negative conductance.
- Here we shall concentrate on three of the most commonly used negative conductance devices: Esaki or tunnel diodes.