

Semiconductors - Overview

1. Define and differentiate conductors, insulators and semiconductors.
2. Classification of semiconductors – intrinsic and extrinsic
3. Types of extrinsic semiconductors – n type and p type
4. Discuss the position of acceptor level (band) in p type and donor level (band) in n type.
5. Ways to increase conductivity of intrinsic semiconductors – raise temperature, doping
6. What is Fermi level and Fermi energy
7. Prove that Fermi level lies in the middle of energy gap in intrinsic semiconductors
8. Dependence of Fermi level on temperature and carrier concentration
9. Position of Fermi level in n type and p type semiconductors
10. Discuss carrier generation and carrier recombination
11. Discuss briefly pn junction
12. Discuss diffusion current, formation of depletion layer, depletion width, and drift current
13. Brief introduction to LED and Solar cell.