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CH = 1

- free electron theory
- Density of state
- Kronig - Penny model
- formation of energy band
- Direct - Indirect bandgap
- electronic material
- Insulator
- semiconductor
- conductor
- Fermi level, effective mass, Phonons

CH = 5

- superconductivity
- Properties of superconductors
  - Meissner effect
- BCS theory
- London penetration Depth
- Josephson Effect
- Type of superconductor
- Application of superconductor.

Unit - 2 Semiconductors.

* Syllabus : ① Intrinsic and Extrinsic semiconductors.

② Dependance of Fermi level on carrier concentration and temp. (equilibrium carrier statistics)

③ carrier generation and recombination, carrier transport, diffusion, drift, P-n - junction.

④ Metal - semiconductor junction (ohmic & Schottky)

Semiconductor material of interest for optoelectronic devices.

Unit - 3

Light - semiconductor interaction

* Syllabus – Optical transition in bulk semiconductors - absorption, spontaneous emission and stimulated emission.
  - Joint density of states.
  - Density of states for photons.
  - Transition rate (Fermi's golden rule)
  - Optical loss and gain, photovoltaic effect - Exciton
  - Drude model