

Teaching Plan(Session 2021-22)

Class- B.Sc 3

Teacher Name-Balwinder Kaur

Subject-Physics

Period No. 4

Name of Paper- Condensed Matter Physics ,Electronics

Sr. No.	Date	Topics to be covered
1.	01/09/2021-20/09/2021	Crystal Structure. Symmetry operations for a two dimensional crystal. Two dimensional Bravais lattices, Three dimensional Bravais lattices" Basic primitive cells. Crystal planes and Miller indices.
2.	21/09/2021-10/10/2021	Diamond and NaCl structure. Packing fraction for Cubic and hexagonal closed packed structure.Crystal Diffraction: Bragg's Law, Experimental methods for crystal structure studies, laue equations
3.	11/10/2021-27/10/2021	Reciprocal lattices of SC, BCC and FCC, Bragg's Law in reciprocal lattice. Brillouin zones and its derivation in two dimensions, Structure factor and atomic form factor.
4.	28/10/2021-14/11/2021	Junction transistor: structure and working, relation between different currents in transistors, Sign conventions. Amplifying action, Different configurations of a transistor and their comparison, CB and CE characteristics.
5.	15/11/2021-20/11/2021	MST Exams
6.	21/11/2021-5/12/2021	Structure, Characteristics, operation of FET, JFET and MOSFET, Pinch off voltage, Enhancement and Depletion mode, Comparison of JFETs and MOSFETs, Difference in field effect transistor and junction type transistor.Photo-conductive devices: Photo-conductive cell, Photodiode, Solar cell, LED, LCD.
7.	28/01/2022-15/02/2022	Lattice vibrations, Concepts of phonons, Scattering of protons by phonons. Vibration of mono-atomic, di-atomic, linear chains. Density of modes, Einstein and Debye models of specific heat, Free electron model of metals.
8.	16/02/2022-01/03/2022	Free electron, Fermi gas and Fermi energy.Band theory, Kronig-Penney Model. Metals and insulators, Conductivity and its variation with temperature in semiconductors, Fermi levels in intrinsic and extrinsic semiconductors

9.	02/03/2022-15/03/2022	Qualitative discussion of band gap in semiconductors, superconductivity, Magnetic field effect in superconductors, BCS theory. Thermal properties of superconductors Thyristor, SCR, TRIAC, DIAC: Construction, Characteristics and Operation; Comparison between transistors and thyristors; Difference between SCR and TRIAC.
10.	16/03/2022-28/03/2022	SCR, TRIAC, DIAC: Construction, Characteristics and Operation; Comparison between transistors and thyristors; Difference between SCR and TRIAC UJT: its construction, Equivalent circuit, Characteristics and parameters, uses.
11.	29/03/2022-03/04/2022	MST Exams
12.	04/04/2022-25/04/2022	Thermistor: Types, Construction, Characteristics, Uses, Advantages over other temperature sensing devices IMPATT and TRAPATT devices, PIN diode: Construction, Characteristics, Applications.