**PG.GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Odd Semester (For Ongoing Classes UG-PG)**

**Session (2021-2022)**

**Class: B.Sc 5th Semester**   **Name of the Teacher: Suresh Kumar**

**Subject: Physics Period :2nd/5th**

**Paper :A&B Room No : 129**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | Crystal structure: Symmetry operations for a two dimensional crystal  Concept of current and voltage sources, Thevenin’s theorem |
| Week 2 | 16-08-2021 to 21-08-2021 | Two dimensional Bravais lattices, Three dimensional Bravais lattices, Basic primitive cells  Norton’s theorem, sources conversion |
| Week 3 | 23-08-2021 to 28-08-2021 | Crystal planes and Miller indices  CRO, Block diagram, construction and principle of working |
| Week 4 | 31-08-2021 to 04-09-2019 | Diamond and NaCl structure  Use of CRO for frequency, time period |
| Week 5 | 06-09-2021 to 11-09-2021 | Crystal diffraction : Bragg’s Law, Determination of crystal structure  Special features of dual trace phase measurements |
| Week 6 | 13-09-2021 to 18-09-2021 | Laue equations, Reciprocal lattices of SC, BCC and FCC, Bragg’s law in reciprocal lattice  Energy band diagrams in semiconductors, direct and indirect semiconductors |
| Week 7 | 20-09-2021 to 25-09-2021 | Brillouin zones and its derivation in two dimensions  Formula to calculate position of Fermi level in p and n semiconductors, Barrier formation |
| Week 8 | 27-09-2021 to 01-10-2021 | Structure factor and atomic form factor  Energy band diagram of p-n junction, formula for depletion width, qualitative ideas of current flow mechanism in forward and reverse biased diode |
| Week 9 | 04-10-2021 to 09-10-2021 | Band Theory of solids, periodic potential and Bloch theorem,  V-I characteristics, static and dynamic resistance, depletion and diffusion capacitance, Zener diode, LED, photodiode and solar cell |
| Week 10 | 11-10-2021 to 16-10-2021 | Kronig-Penney model  Diode circuit, clipping circuits |
| Week 11 | 18-10-2021 to 19-10-2021 | Band gaps, band structures in conductors  Rectification: half wave, full wave and bridge rectifiers |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 12 | 01-11-2021 to 06-11-2021 | Direct and indirect semiconductors and insulators  Filter circuits(C, LC and π-filters), rectification efficiency and ripple factor in LC filter, voltage regulation circuit using Zener diode voltage multiplier circuits |
| Week 13 | 08-11-2021 to 13-11-2021 | Free electron theory of metals  BJT structure and working different currents in transistor, switching action, Characteristics of CB, CE and CC configuration, active, cut off and saturation region |
| Week 14 | 15-11-2021 to 20-11-2021 | Effective mass, drift current, mobility  Load line analysis of transistors, Q-point, transistor biasing and stabilization of operating point, fixed bias |
| Week 15 | 22-11-2021 to 27-11-2021 | Conductivity (carrier concentration and mobility of carriers) and their variation with temperature in semi-conductors  Collector to base bias, bias circuit with emitter resistor, voltage divider biasing circuit |
| Week 16 | 29-11-2021 to 30-11-2021 | Fermi level positions in intrinsic and extrinsic semiconductors , Wiedemann-Franz law, Hall effect in metals and semiconductors  Working and analysis of CE amplifier using h-parameters, current, voltage and power gain, input and output impedance, Class A, B and C amplifiers. |