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

**Teaching Plan Session Odd Semester**

**(2018-19)**

**Class: B.Sc 5thSem/ B.Sc(Hons.) 3rd Sem Name of the Teacher: Rajwinder Singh**

**Subject: Physics Period : 1st/5th**

**Paper : A Room No : 129/319**

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| **S. No** | **Date From** | | **Date Upto** | **Topics to be covered** |
| Week 1 | **(For ongoing classes)** | | | Crystal structure: Symmetry operations for a two dimensional crystal  Basics of Vacuum Techniques:  Introduction, classification of vacuum ranges, |
| July 24, 2018 | | July 28, 2018 |
| Week 2 | July 30, 2018 | August 4, 2018 | | Two dimensional Bravais lattices and three dimensional Bravais lattices  Throughput, Pump speed, speed  of exhaust, |
| Week 3 | August 6, 2018 | August 11, 2018 | | Basic primitive cells, Crystal planes and Miller indices  Conductance, ultimate pressure |
| Week 4 | August 13, 2018 | August 18, 2018 | | Diamond and NaCl structure.  Viscous flow, molecular flow  Production of Low Pressures:  Pump types |
| Week 5 | August 20, 2018 | August 25, 2018 | | Crystal diffraction : Bragg’s Law  Gaede oil-sealed rotating vane pump |
| Week 6 | August 27, 2018 | September 1, 2018 | | Determination of crystal structure  Diffusion pump, sputter ion  pumps |
| Week 7 | September 3, 2018 | September 8, 2018 | | Laue equations, Reciprocal lattices of SC, BCC and FCC  Gettering, types of getters, Cryogenic pumps ,Measurement of Low Pressures: Types of gauges, Mcleod gauge, Pirani gauge |
| Week 8 | September 10, 2018 | September 15, 2018 | | Bragg’s law in reciprocal lattice,  Measurement of ultrahigh vacuum, penning gauge |
| Week 9 | September 17, 2018 | September 22, 2018 | | Brillouin zones and its derivation in two dimensions  Methodology of Vacuum systems:  Vacuum system |
| Week 10 | September 24, 2018 | September 29, 2018 | | Structure factor and atomic form factor  Materials for vacuum system, cleaning and sealing of  vacuum system, Leak detection and its location. |
| Week 11 | October 1, 2018 | October 8, 2018 | | Band Theory of solids, periodic potential and Bloch theorem  Production and Measurement of Low Temperatures: |
| **MID SEMESTER EXAMINATION (October 11, 2018 to October 17, 2018)** | | | | |
| Week 12 | October 20, 2018 | October 27, 2018 | | Kronig-Penney model, band gaps  Various methods for refrigeration |
| Week 13 | October 29, 2018 | November 3, 2018 | | band structures in conductors  Coefficient of performance, Liquefaction of gases |
| Week 14 | November 5, 2018 | November 10, 2018 | | Direct and indirect semiconductors and insulators.  Joule-Thomson effect, Principle of regenerative cooling, liquefaction of H2 and He |
| Week 15 | November 12, 2018 | November 17, 2018 | | Free electron theory of metals, effective mass, drift current, mobility  Liquefaction of nitrogen,Solidification of He. Liquid He II |
| Week 16 | November 19, 2018 | November 22, 2018 | | conductivity (carrier  concentration and mobility of carriers) and their v  ariation with temperature in semi-conductors  Thermodynamics of λ -transition,  Adiabatic demagnetization, |
| Week 17 | November 26, 2018 | December 1, 2018 | | Fermi level positions in intrinsic  and extrinsic semiconductorsWiedemann-Franz law, Hall effect in metals and  semiconductors  Linde’s method, Temperat  ures below 0.01K, Low temperature thermometry and techniques, Use of liquid air and other liquefied gases. |