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

**Teaching Plan Session Odd Semester**

**(2018-19)**

**Class: IIIRD Sem/VTH Sem Name of the Teacher: NEHA**

**Subject: Statistical Physics and**

**Thermodynamics/Electronics**

**and Solid State Devices Period : IVTH/1ST**

**Paper : Paper-A/ Paper-B Room No : 221/126**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No** | **Date From** | | **Date Upto** | **Topics to be covered** |
| Week 1 | **(For ongoing classes)** | | |  |
| July 24, 2018 | | July 28, 2018 |
| Week 2 | July 30, 2018 | August 4, 2018 | | Basic ideas of statistical physics, scope of statistical physics, basic ideas of probability  Energy band diagrams in semiconductors, Direct and indirect semiconductors |
| Week 3 | August 6, 2018 | August 11, 2018 | | Particle distribution in compartments, concept of macrostates, microstates & thermodynamic probability  Formula to calculate  Position of Fermi level in p and n semiconductors, Barrier formation, energy band diagram of p-n junction |
| Week 4 | August 13, 2018 | August 18, 2018 | | Effect of constraints on the system, Distribution of n particles in two compartments  Formula for Depletion width, Qualitative ideas of current flow mechanism in forward and  reverse biased diode |
| Week 5 | August 20, 2018 | August 25, 2018 | | Deviation from the state of maximum probability*,* equilibrium state of dynamic system  V-I characteristics, static and dynamic resistance |
| Week 6 | August 27, 2018 | September 1, 2018 | | Distribution of n particles in k compartments of unequal size with numerical  Depletion and diffusion  Capacitance, Zener diode |
| Week 7 | September 3, 2018 | September 8, 2018 | | Phase space and its division into elementary cells*,* Three kinds of statistics & their basic approach  LED , photodiodes and solar cells and their working |
| Week 8 | September 10, 2018 | September 15, 2018 | | Maxwell boltzmann statistics applied to an ideal gas in equilibrium  Concepts of current and voltage sources, Thevenin’s theorem, Norton’s theorem |
| Week 9 | September 17, 2018 | September 22, 2018 | | Experimental verification of M.B. laws of distribution of molecular speeds.  Source conversion.  CRO, Block diagram, construction and principle of working |
| Week 10 | September 24, 2018 | September 29, 2018 | | Need of quantum statistics- B.E. statistics  Use of CRO for frequency, time period,  special features of dual trace, phase measurements. |
| Week 11 | October 1, 2018 | October 8, 2018 | | Derivation of Planck’s law of radiation  Diode circuits, Clipping circuits. Rectification: half wave, full wave and bridge rectifiers |
| **MID SEMESTER EXAMINATION (October 11, 2018 to October 17, 2018)** | | | | |
| Week 12 | October 20, 2018 | October 27, 2018 | | Numerical based questions  Filter circuits  (C, LC and filters) |
| Week 13 | October 29, 2018 | November 3, 2018 | | Deduction of Wien’s displacement law from Planck’s law  Rectification efficiency and ripple factor in LC filter, voltage regulation, voltage multiplier circuits. |
| Week 14 | November 5, 2018 | November 10, 2018 | | Stefan’s law from Planck’s law  Bipolar Junction transistors : Structure and working, different currents in transistor, switching action |
| Week 15 | November 12, 2018 | November 17, 2018 | | F.D. Statistics  Voltage divider biasing circuit.  Characteristics of CB, CE and CC configurations, Active, cutoff and saturation regions.  Load line analysis of transistors, Q-point |
| Week 16 | November 19, 2018 | November 22, 2018 | | Comparison of M.B., B.E., & F.D. Statistics  Transistor biasing and stabilization of operating point, Working and analysis of CE amplifier using h-parameters, current, |
| Week 17 | November 26, 2018 | December 1, 2018 | | Revision with numerical based problems  Voltage and power gain, input and  output impedance. Class A, B and C amplifiers. |