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

**Teaching Plan Even Semester**

**Session (2018-19)**

**Class: B.Sc. 4thSemester Name of the Teacher:Kamlesh Kumari**

**Subject: Physics Period : 4Th**

**Paper : Room No : 221**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 14 /01/2019 – 19/01/2019 | Interaction of light with matter :Absorption ,spontaneous emission, stimulated emission, Wave mechanical explanation. |
| Week 2 | 21/01/2019 –  25/01/2019 | Properties of spectral lines, Temporal and spatial coherence, Characteristics of stimulated emission , Einstein coefficients and their relations. |
| Week 3 | 28/01/2019 –  2/02/2019 | Light amplification and threshold condition, Population inversion, Kinetics of optical absorption( qualitative account only. |
| Week 4 | 4/02/2019 –  9/02/2019 | Statistical definition of entropy, change of entropy of a system, additive nature of entropy, law of increase  of entropy, reversible and irreversible processes with examples. Work done in a reversible process.  Examples of increase of entropy in natural processes. Entropy and disorder. |
| Week 5 | 11/02/2019 –  16/02/2019 | Qualitative account of collisional broadening .Doppler broadening & natural broadening , Mechanism of Luminescence . |
| Week 6 | 18/02/2019 –  23/02/2019 | Brief review of the terms and  Laws of Thermodynamics, Carnot’s Cycle. Entropy changes in Carnot’s Cycle. Applications of  thermodynamics to thermoelectric effect, change of entropy along a reversible path in a P.V. diagram. |
| Week 7 | 25/02/2019 –  02/03/2019 | Lasing action, components of laser. Elementary theory of optical cavity, Longitudinal and transverses modes, Principal pumping schemes. Three level and four level laser schemes. Discussion of short answer type questions. |
| Mid Semester Exam | | |
| Week 8 | 11/03/2019 –  16/03/2019 | Laser systems : Types of lasers , Ruby and Nd : YAG lasers ,He-Ne. |
| Week 9 | 18 /03/2019 –  22/03/2019 | entropy of a perfect gas. Equation of state of ideal gas from simple statistical consideration. Heat death of  the universe. Discussion of short answer type questions. |
| Week 10 | 25/03/2019 –  30/03/2019 | Dye and co2 lasers -construction ,mode of creating population inversion and output characteristics.  Applications of lasers - a general outline , Holography.Principle,recording of hologram and reconstruction of image . |
| Week 11 | 1/04/2019 –  6/04/2019 | Numerical problems and class test. |
| Week 12 | 8/04/2019 –  12/04/2019 | Fibre optics : Photonics ,optical fibre,construction, Numerical aperture, acceptance angle, skip distance ,  Step index fibre - single mode and multimode, graded index Fibre. |
| Week 13 | 15/04/2019 –  20/04/2019 | losses in optical fibre ,material losses and Rayleigh scattering, bending losses, intermodal and intramodel dispersion. |
| Week 14 | 22/04/2019 –  27/04/2019 | Splicing techniques , optical fibre based communication system,Medical applications .Discussion of short answer type questions. |
| Week 15 | 29 /04/2019 –  3/05/2019 | Numerical problems and class test. |