**Govt College for Women Gurawara**

Department of Physics
Course Hand-out

Electromagnetic Induction and Electronic Devices

Faculty: Dr.Jyoti | Class: BScPass Course (Non- Medical) IV Sem

**Lecture Plan:**

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| **LEC NO** | **TOPICS** |
| 1-3 | **Electromagnetic Induction** : Growth and decay of current in a circuit with (a) Capacitance and resistance  |
| 4 | (b) resistance and inductance (c) Capacitance and inductance  |
| 5 | (d) Capacitance resistance and inductance |
| 6-7 | AC circuit analysis using complex variables with (a) capacitance and resistance, (b) resistance and inductance  |
| 8-11 | AC circuit analysis using complex variables with (c) capacitance and inductance (d) capacitance |
| 12 | **Tutorial – I ( Numerical Problems)** |
|  13-14 | resistance Series and parallel resonant circuit. Quality factor (Sharpness of resonance) |
| 15-17 | **Semiconductor Diodes** : Energy bands in solids. Intrinsic and extrinsic semiconductor, Hall effect |
| 18 | **Class Test** |
| 19-22 | P-N junction diode and their V-I characteristics. Zener and avalanche breakdown. Resistance of a diode,  |
| 23-24 | Light Emitting diodes (LED). Photo conduction in semiconductors, photodiode, Solar Cell. |
| 21-22 | **Diode Rectifiers** : P-N junction half wave and full wave rectifier |
| 23-25 |  Types of filter circuits (L and - with theory). Zener diode as voltage regulator, simple regulated power supply. |
| 26 | **Tutorial – III( Numerical Problems)** |
| 27-29 | **Transistors** : Junction Transistors, Bipolar transistors, working of NPN and PNP transistors |
| 30-32 | Transistor connections (C-B, C-E, C-C mode), constants of transistor |
| 33-35 | Transistor characteristic curves (excluding h parameter analysis), advantage of C-B configuration. C.R. O. (Principle, construction and working in detail). |
| 36-38 | **Transistor Amplifers** : Transistor biasing, methods of Transistor biasing and stabilization. D.C. load line.  |
| 39-41 | Common-base and common-emitter transistor biasing. Common-base, common- emitter amplifiers. Classification of amplifiers. Resistance-capacitance (R-C) coupled amplifier (two stage; concept of band width, no derivation). Feed-back in amplifiers, advantage of negative feedback Emitter follower.  |
| 42-45 | Resistance-capacitance (R-C) coupled amplifier (two stage; concept of band width, no derivation). Feed-back in amplifiers, advantage of negative feedback Emitter follower.  |
| 46 | **Class Test** |
| 47-48 | Oscillators : Oscillators, Principle of Oscillation, Classification of Oscillator. Condition for self sustainedoscillation :Barkhousen Criterion for oscillations. Tuned collector common emitter oscillator. Hartley oscillator. Colpitt’s oscillator. |
| 49-50 | Tuned collector common emitter oscillator. Hartley oscillator. Colpitt’s oscillator. |
| 51 | **Tutorial – V(Problems)** |
| 52-54 | Conclusion and Course Summarization |