

**CORE COURSE IX - ANALOG ELECTRONICS**

**Unit I Semiconductors and diodes**

Intrinsic and extrinsic semi conductor – PN junction diode – Biasing of PN junction – VI Characteristics of diode – Rectifiers – Half wave – full wave and bridge rectifiers – Break down mechanisms – Zener diode characteristics of Zener diode – Zener diode as voltage regulator.

**Unit II Bipolar Transistors**

Bipolar junction transistor – Basic configurations Relation between  $\alpha$  and  $\beta$  – Characteristic curves of transistor – CB,CE mode – DC load line – DC bias and stabilization – fixed bias – voltage divider bias – Transistor as an amplifier – Transistor as a two port network – h Parameters.

**Unit III Amplifiers and Oscillators**

Single stage CE amplifier – Analysis of hybrid equivalent circuit – Power amplifiers – Efficiency of class  $\beta$  Power amplifier – Push – pull amplifier – General theory of feedback – Properties of negative feedback – Criterion for oscillations – Hartley oscillator – Colpitt's oscillator.

**Unit IV Special Semiconductor devices**

FET – JFET – MOS FET – FET parameters – Comparison between FET and Transistor – Photo transistor – SCR – SCR as a switch – UJT – UJT relaxation oscillator.

**Unit V Operational Amplifiers**

Differential amplifier - Common mode rejection ratio – Characteristics of an ideal op-amp – Virtual ground – Inverting amplifier – Non inverting amplifier – Applications. Adder – subtractor – Integrator – Differentiator – Unity gain buffer.

**Books for study**

- 1) Mehta V.K., Principles of Electronics, S.Chand and company Ltd.
- 2) Chattopadhyay, D., Raxshit, P.C., Sara, B.and Purkait, New Age International (P) Ltd.

**Books for Reference**

- 1) Theraja . B.L., Basic electronics solid state, S.Chand and Company Ltd (2002).
- 2) Sedha R.S., A text book of applied Electronics, S.Chand & company Ltd (2002).