

Second year of Five Years integrated M.Sc. (Physics)

M. Sc. - II, Semester – IV

MP 202 :

Basic Electronics

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- **BASIC CIRCUIT ANALYSIS** (06 Hours)
Kirchoff's current and voltage law, Network analysis, Superposition theorems.
 - **SEMICONDUCTOR JUNCTION DIODES & APPLICATIONS** (08 Hours)
The open circuit p-n junction, Energy bands in junction diode, I-V characteristics of p-n junction, diode as rectifier, Half-wave, full-wave, and bridge rectifier. Various applications of diode
 - **SEMICONDUCTOR TRANSISTOR & APPLICATIONS** (08 Hours)
Junction transistor, transistor construction, CB, CE and CC configurations, cut-off and saturation regions, transistor load-line, Quescent point, Transistor as an amplifier, Current gain and voltae gain.
 - **FREQUENCY RESPONSE OF AMPLIFIERS** (06 Hours)
The gain-bandwidth product, frequency response of CB, CE and CC amplifier, Classification of amplifiers, Feed-back in amplifiers and its classification, Study of different properties with feed-back Amplifier applications.
 - **OPERATIONAL AMPLIFIERS** (08 Hours)
The differential amplifier, The basic operational amplifier, The emitter-coupled differential amplifier, Transfer characteristics of a differential amplifier, Offset error voltage and currents, Parameters, Frequency response,
 - **OSCILLATORS** (08 Hours)
Criteria for oscillation, tank circuit, L-C oscillator, Hertley Oscillator, Colpitt oscillator, The phase shift oscillator, the Wien bridge oscillator, Crystal oscillator.

(Total Contact Time (Theory): 44 Hours)

BOOKS RECOMMENDED :

1. **Ryder, J.D.**, *Electronics fundamentals and applications* : Integrated and Discrete Systems, Prentice – Hall of India, 1999.
2. **Sze, S. M.** *Physics of Semiconductor Devices*, John Wiley & sons, 1981.
3. **Floyd, T.L** *Electronic Devices* (5th ed). –, Pearson education Asia (2001)..
4. **Malvino, A.P.** *Electronic Principles*, Tata McGraw Hill, 1999.
5. **Mottershed, A.**, *Electronic Devices and circuits*, , Prentice Hall India, 1989.