Paper Code : BEL:105
Paper Name : **Basic Electronics**

Teaching Hours (Per Week)		**Examination Scheme**		
TH. (hours)	Pr. (hours)	Internal	External	Total
		Th. (marks)	Th. (marks)	100 (marks)
4		30	70	

Lectures = 68 Hours

Detailed Syllabus

UNIT 1 : COMPONENTS — 14 Hours

Introduction to Components– Passive and active components – Resistors, standardisation, colour coding techniques, types of resistors –Capacitors, types of capacitors – Inductors, types of inductors, features and specification, transformers, types of transformer.
Diodes- Atomic theory – Structure of Silicon and Germanium – Energy band diagram of conductors, semiconductor, insulator – Intrinsic & extrinsic semiconductor – PN junction diode – Characteristics of forward & reverse bias PN junction.

UNIT 2 : SPECIAL DIODES & THEIR APPLICATIONS — 8 Hours

Special Diodes – Zener diode – Light Emitting Diode (LED) – Light Dependent Diode (LDR).
Rectifier – Half wave and Full wave (Bridge & Centre-Tapped) rectifier – Ripple Factor – Efficiency and filter circuits of rectifiers.

UNIT 3 : TRANSISTORS & BIASING METHODS — 17 Hours

Bipolar Junction Transistor – Transistor construction – PNP and NPN transistor – Modes of operation – Common base configuration (CB), Common emitter configuration (CE), Common collector configuration (CC) – Transistor parameters – Relationship between α and β – Biasing Methods – Fixed Bias – Collector-Base Bias – Emitter Bias
Field Effect Transistors – Classification of FET – Comparative study of BJT and JFET – Merits and demerits of FET – Construction of JFET – JFET Characteristics – MOSFET (Enhancement & Depletion)

UNIT 4 : POWER AMPLIFIERS & OP-AMP — 17 Hours

Amplifiers – Introduction – Classification of power amplifiers – Class A,B,AB,C – Single stage amplifier – R-C coupled amplifier – Transformer coupled class A amplifier –Pull-pull amplifier.
Feedback Amplifier – **Positive** and Negative feedback amplifiers (Qualitative Study only) – Applications of Op-Amp.

UNIT 5 : OSCILLATORS 12 Hours

Definition – Conditions for oscillation – Classification of oscillators – RC phase shift – Wien bridge – Colpitts oscillators – Hartley – Crystal oscillators – Difference between rectifiers, amplifiers and oscillators.

RECOMMENDED BOOKS

Main Reading:

1. Basic Electronics, Grobe, McGraw Hill

2. Electronics Devices and Circuits, G.S.N Raju

3. Electronic Devices and Circuits, Jacob Millman & Christos C.Halkias, Tata McGraw–Hill

Supplementary Books

1. Electronic Devices and Circuits, S. Salivahanan, N. Suresh Kumar and A. Vallavaraj, Tata McGraw Hill

2. Electronics Devices and Components, A. Jamila Rani, N.V. Publications