

EE151: BASIC ELECTRICAL & ELECTRONICS ENGINEERING

CREDITS = 6 (L=4, T=0, P=2)

A		
Electrical Engineering		
1	Fundamental of Electricity: Types of supply, Basic terms associated with Electricity like Current, Voltage, Power, Power factor, frequency etc.	2 Hours
2	Flow of Electrical power from generating station to consumers, Block diagram of Electricity Generation. Transmission & Distribution system. Importance of power transformers.	3 Hours
3	Basic requirements of Electric Wiring. Types of Wiring. Precautions to be taken during Electrical wiring. Importance of Electrical Earthing. Methods of Earthing. Electrical Shocks and its effect on human boy, Care & Curing methods for Electrical shock, Precaution against electrical shock	3 Hours
4	Types of Power station: Brief explanation of working & block diagram for layout of Power stations. Types of alternative source of energy& its importance.	3 Hours
5	Types of AC & DC motors: Salient features (Working principle & output characteristics) of DC motors & their applications. Salient features of Induction motors & their applications. Comparison of Induction Motor & Synchronous Motor. Application of Synchronous Motor.	6 Hours
6	Domestic appliances & Special Motors: Brief principle and working of special AC motors used in domestic appliance; Stepper motor and Servomotor.	3 Hours
B		
Electronics Engineering		
1	Basics of Electronics: Basic operation of PN junction diode and bi-polar junction transistor, Basic requirements and characteristics of Rectifier, Amplifier and Oscillator.	3 Hours
2	Logic Circuits: Study of logic gate, flip-flops, Shift registers and counters and their applications.	4 Hours
3	Integrated Circuits: Brief explanation of working OPAMP IC and its applications. Timer IC 555- its working & applications.	4 Hours
4	Electronic Instruments: Operation of digital Multi-meter. Working of Cathode Ray Tube, Block diagram and working of CRO. Measurement of various electrical quantities using CRO.	4 Hours
5	Electronic Communications: Brief explanation of Modulations & Demodulations. Working & block diagram of Radio receiver. Overview of fiber optic communication.	5 Hours

REFERENCE BOOKS:

Title: A text book of Electrical Technology Vol. I & II

Author: B. L. Theraja & A. V. Theraja

Publisher: S. Chand & Company Limited – Delhi

Title: Elements of Electrical Engineering & Electronics

Author: U. A. Patel

Publisher: Atul Prakashan – Ahmedabad

Title: Electrical wiring, Estimation & Costing

Author: S. L. Uppal

Publisher: Khanna Publishers – Delhi

Title: Basic Electrical and Electronics Engineering

Author: J. C. Panchal, Bhuvanesh Oza & Vishvjit Thakar

Publisher: Roopal Prakashan – Vallabh Vidyanagar

Title: Modern Electrical & Electronics Practice

Author: M. R. Patel & R. M. Patel

Publisher: Akshat Publication & Distributors – Surendranagar

LIST OF PRACTICALS:**A Electrical Engineering**

- 1 Verification of Circuit laws for DC circuits.
- 2 Verification of circuit laws & concepts for AC circuits
- 3 Wirings of Domestic equipments.
- 4 Characteristics of DC shunt motor.
- 5 Characteristics of DC series motor.
- 6 Characteristics of Induction motor.
- 7 MCB characteristics

B Electronics Engineering

- 1 VI Characteristic of PN Junction Diode.
- 2 Output characteristic of Common Emitter Transistor Circuit.
- 3 Verification of Truth table of Logic gates and Flip Flop.
- 4 Measurement of frequency, phase difference, Amplitude, etc. with CRO.
- 5 Inverting, non-inverting, adder circuit using OPAMP
- 6 Demonstration of Amplitude Modulation.