



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

ELECTRICAL TECHNOLOGY

Course Code: GR15A2004
II Year I Semester

L:2 T:1 P:0 C:3

Prerequisites: knowledge of Basic electrical engineering

Course Objectives: At the end of the course the student is expected to

- Prepare the students a basic knowledge in the analysis of Electric Circuits.
- Provide students with a strong back ground in induction machines, speed control techniques and its characteristics and different types of machines existing in present trend.
- Train the students to have the solid foundation in technical concepts required to engineering problems.
- Train the students in understanding the usage of electronic instruments in measuring techniques.

Course Outcomes: Students will learn

- Will be familiar with ac and dc circuits solving.
- An ability to find role of electrical machinery in simple & complex applications.
- To demonstrate the designing and conducting experiments, to analyze and interpret data, and also provides the ability to visualize and work on laboratory and multidisciplinary tasks.

Unit-I

Electrical Circuits: Basic definitions, Types of elements, Ohm's Law, Resistive networks, Kirchhoff's Laws, Inductive networks, Capacitive networks, Series, Parallel circuits and Star-delta and delta star transformations.

Unit-II

DC Machines and Ac Machines: Principle of operation of DC Generator – emf equation - types – DC motor types – torque equation – applications – three point starter. Principle of operation of alternators – regulation by synchronous impedance method – Principle of operation of induction motor – slip – torque characteristics – applications.

Unit-III

Transformers and Instruments: Principle of operation of single phase transformers – EMF equation – losses – efficiency and regulation.



Basic Principle of indicating instruments – permanent magnet moving coil and moving iron instruments.

Cathode Ray Oscilloscope: Principles of CRT (Cathode Ray Tube), Deflection, Sensitivity, Electrostatic and Magnetic deflection, Applications of CRO - Voltage, Current and frequency measurements.

Unit-IV

Diode and it's Characteristics: P-N junction diode, symbol, V-I Characteristics, Diode Applications, Rectifiers – Half wave, Full wave and Bridge rectifiers (simple Problems).

Unit-V

Transistors: P-N-P and N-P-N Junction transistor, Transistor as an amplifier, SCR characteristics and applications.

Teaching Methodologies

1. ET PPTs
2. Assignments uploaded in website

Text Books

1. David V. Kerns, JR. J. David Irwin, Essentials of Electrical and Computer Engineering.
2. V. K. Mehta, S. Chand & Co, Principles of Electrical and Electronics Engineering.

Reference Books

1. M.S Naidu and S. Kamakshaiah , Introduction to Electrical Engineering, TMH Publications.
2. Kothari and Nagarath, Basic Electrical Engineering, TMH Publications, 2nd Edition.