



**MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT  
(AUTONOMOUS)**

**(24X0201) Principles of Electrical and Electronics Engineering**  
(Common to All Branches)

**MODULE –I:**

**DC Circuits:** Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff's laws, analysis of simple circuits with DC excitation, Superposition theorem, Norton's Theorem and Thevenin's Theorem.

**MODULE – II:**

**AC Circuits:** Representation of sinusoidal waveforms, peak, Average and rms values, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single-phase ac circuits, Three-phase balanced circuits, voltage and current relations in star and delta connections.

**MODULE -III:**

**Transformers:** Construction and working principle of Single-phase transformer, equivalent circuit, losses in transformers, efficiency.

**DC Machines:** Construction and working principle of DC generators, EMF equation, working principle of DC motors and Torque equation.

**MODULE -IV:**

**Components of LT Switchgear:** Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of wires, cables and earthing.

**Batteries:** Types of batteries, important characteristics for batteries, elementary calculations for energy consumption, power factor improvement and battery backup.

**MODULE -V:**

**PN junction Diode:** Volt-Ampere characteristics, applications, Static and dynamic resistances.

**Zener Diode:** Volt-Ampere characteristics and its applications.

**Rectifiers:** Half wave Rectifier, full wave rectifier, Bridge Rectifier-Ripple factor, efficiency and peak inverse voltage.

**Text Books:**

1. Basic Electrical Engineering - By M.S. Naidu and S. Kamakshaiah – TMH.
2. Basic Electrical Engineering –By T.K. Nagasarkar and M.S. Sukhija Oxford University Press.
3. Electronic Devices and Circuits- J. Millman, C. Halkias, Tata Mc-Graw Hill, Second Edition.
4. Integrated Electronics- Jacob Millman, C. Halkies, C.D.Parikh, Tata Mc-Graw Hill, 2009.



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**Reference Books:**

1. Theory and Problems of Basic Electrical Engineering by D.P. Kothari & I.J. Nagrath PHI.
2. Principles of Electrical Engineering by V. K Mehta, S.Chand Publications.
3. Essentials of Electrical and Computer Engineering by David V. Kerns, JR. J. David Irwin Pearson.
4. Electronic Devices and Circuits-K. Satya Prasad, VGS Book Links.
5. Electronic Devices and Circuits-Salivahanan, Kumar, Vallavaraj, Tata Mc-Graw Hill, Second Edition
6. Electronic Devices and Circuits – Bell, Oxford.