

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

II Year B.Tech. CE - I Sem L T/P/D C

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ELECTRICAL AND ELECTRONICS ENGINEERING

Objective:

This course introduces the concept of electrical DC and AC circuits, basic law's of electricity, instruments to measure the electrical quantities, different methods to solve the electrical networks, construction operational features of energy conversion devices i.e., DC and AC machines, transformers. It also emphasis on basics of electronics, semiconductor devices and their characteristics and operational features.

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.

Instruments: Basic Principle of indicating instruments - permanent magnet moving coil and moving iron instruments.

UNIT - II

DC Machines: Principle of operation DC Generator - EMF equation - types - DC motor types - torque equation - applications - three point starter.

UNIT - III

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

AC Machines: Principle of operation of alternators - regulation by synchronous impedance method - Principle of operation of induction motor - slip - torque characteristics - applications.

UNIT - IV

Diodes: P-n junction diode, symbol, V-I Characteristics, Diode Applications, and Rectifiers - Half wave, Full wave and Bridge rectifiers (sample problems).

Transistors: PNP and NPN junction transistor, Transistor as an amplifier, SCR characteristics and applications.

UNIT - V

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

EEE: TEXT BOOKS:

1. Basic concepts of Electrical Engineering, PS Subramanyam, BS Publications.
2. Basic Electrical Engineering, S.N. Singh, PHI.

EEE: REFERENCE BOOKS:

1. Basic Electrical Engineering, Abhijit Chakrabarthy, Sudipta nath, Chandra kumar Chanda, Tata McGraw Hill.
2. Principles of Electrical Engineering, V.K mehta, Rohit Mehta, S. Chand Publications.
3. Basic Electrical Engineering, T.K. Nagasarkar and M.S. Sukhija, Oxford University Press.
4. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI.
5. Basic Electrical Engineering by D.P.Kothari, I.J. Nagrath, McGraw Hill.

ECE: TEXT BOOKS:

1. Electronic Devices and Circuits, S. Sailvahanan, N.Suresh Kumar, A. Vallavaraj, Tata McGraw Hill companies.
2. Electronic Devices and Circuits, K. Lal Kishore, BS Publications.

ECE: REFERENCE BOOKS:

1. Millman's Electronic Devices and Circuits, J. Millman, C.C. Halkias and Satyabrata Jit, Tata McGraw Hill companies.
2. Electronic Devices and Circuits, R.L. Boylestad and Louis Nashelsky, PEI/PHI.
3. Introduction to Electronic Devices and Circuits, Rober T. Paynter, PE.
4. Integrated Electronics, J. Millman and Christos C.Halkias, Tata McGraw Hill companies
5. Electronic Devices and Circuits, Anil K.Maini, Varsha Agarwal, Willey India Pvt. Ltd.

Outcomes:

After going through this course the student gets a thorough knowledge on basic electrical circuits, parameters, and operation of the transformers in the energy conversion process, electromechanical energy conversion, construction operation characteristics of DC and AC machines and the constructional features and operation of measuring instruments like voltmeter, ammeter, wattmeter etc...and different semiconductor devices, their voltage-current characteristics, operation of diodes, transistors, realization of various electronic circuits with the various semiconductor devices, and cathode ray oscilloscope, With which he/she can able to apply the above conceptual things to real-world electrical and electronics problems and applications.