GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - ELECTRONICS & COMMUNICATION ENGINEERING

Semester: II

Subject Name: ELECTRICAL ENGINEERING

Sr. No.	Course content
1.	**D.C. Generator:** Principle of D.C. generator and motor, construction, types of generators, E.M.F. equation, voltage build up process, critical resistance and speed, characteristics of generators, performance equation and efficiency, No load & load characteristics. Performance of shunt, series and compound generators
2.	**D.C. Motor** Type of motors, torque equation, characteristics, losses and efficiency, starters : Necessity of starter, Three point & four point starter. Introduction to soft starter. Torque-speed characteristics of shunt, series & compound motors, Speed control , Basic concept of Static speed control of DC machines, Ward Leonard method
3.	**Single phase Transformer** Construction and principle of **single-phase transformer**, operation at no load and on load, vector diagram, equivalent circuit, losses, efficiency and regulation, determination of regulation and efficiency by direct load test and indirect test methods,
4.	**Induction Motors :** Introduction working principle, Classification of AC motors, Synchronous Speed, speed of rotor field, slip, Various methods of measurement of slip, starting & running torque, torque-slip characteristics, maximum torque, effect of change in voltage & frequency on torque, speed & slip
5.	**Single phase A. C. motors:** Types of single phase motors, 1-phase induction motor, Double field revolving theory, Equivalent circuit of 1-phase induction motor, starting & running performance of 1-phase ind. Motor, symmetrical component concepts, split phase, Resistance start, Capacitor start and capacitor start & run induction motor, shaded pole induction motor, fractional horse power motors.
6.	**Commutator motors:** Action of commutator as a frequency converter, construction and principles of following commutator motors: Repulsion motor, Scharge motor, AC series motor, Universal motor.
7.	**Synchronous Machines:** Syn. generators, Syn. Impedance, Voltage regulation of alternator by (1) Syn. Impedance method & (2) mmf method Syn. Motors: Principles of operation, Phasor diagram with constant excitation, constant power, and methods of starting.

8.	**Stepper Motors**: Construction & working principle of PM motor, VR motor, PMH motor, specifications, applications.
9.	**AC & DC servomotors**: construction ,working, characteristics.

Reference Books:

1. Electrical Technology Vol II by B.L.Theraja
2. Electrical Technology by Katre Tech Max.Pub.