

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - ELECTRICAL ENGINEERING
Semester: II

Subject Name: ELECTRICAL MACHINES I & II

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.	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.

Reference Books:

1. Electrical Technology Vol II by B.L.Theraja
2. Alternating Current Machines by M.G.Say
3. Performance and Design of D.C. Machines by A.E. Clayton
4. Electrical Technology by Katre Tech Max.Pub.