

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: V

DEGREE IN ELECTRICAL ENGINEERING

Subject Name: **Electrical Machine - II**

Sr. No	Course content
1.	<p>Polyphase Transformer:</p> <p>Polarity, Star/star, Star/delta, Delta/delta, delta/zigzag, terminal marking, Nomenclature, Vector diagram, Phase groups, Parallel operation, Scott connection, V-V connections tertiary winding, Testing of transformers, Sumpner's test - efficiency - transients in transformers - voltage regulation - off load and on load tap changers.</p> <p>Concept of Welding transformer, Rectifier transformer & High frequency transformer.</p>
2.	<p>Polyphase Induction Motor:</p> <p>Introduction, No-load & blocked rotor test, equivalent circuit, Phasor diagram, Circle diagram, Efficiency and slip scale with the help of circle diagram, Analogy of an I.M. to a transformer, Effect of rotor resistance on performance of I.M., Double cage squirrel cage IM and its equivalent circuit, Induction machine dynamics.</p> <p>Starters of I.M Principles & Methods of speed control of 3- phase I.M. , Electrical transients in induction machine, Magnetic levitations, Principle, advantages & application of linear induction motor, Effect of harmonics, Harmonic torques, Cogging & Crawling, effect of unbalance voltages & frequency variation on operation of I..M. Testing of induction motor as per IS, Energy efficient motors.</p>
3.	<p>Induction Generator,</p> <p>Principle of operation and application, Its load and p. f. control,</p>
4.	<p>Single phase A. C. motors:</p> <p>Types of single phase motors, Principle and operation of split phase, Resistance start, Capacitor start and capacitor start & run induction motor, Shaded pole induction motor, Fractional horse power motors, Double field revolving theory, Equivalent circuit of 1-phase induction motor, Starting & running performance of 1-phase induction Motor, Losses and efficiency.</p>
5.	<p>Commutator motors:</p> <p>Action of commutator as a frequency converter, Construction and principles of following commutator motors: Repulsion motor, Scharge motor, AC series motor, Universal motor.</p>

Reference Books:

1. Electrical Machines, by Nagarath & Kothari Tata Macgraw hill Pub.
2. Electrical Machines by J. B. Gupta, (S.K.Kataria & Sons).
3. Electrical Technology Vol II. B. L. Theraja. S chand publication.
4. Electrical Machines by P S Bhimbra, Khanna Pub.
5. Performance and Design of A.C. machines by M. G. Say,CBS pub.
6. Electrical machine Drives and Power System by Wildi ,6th Edition, Pearson Publications.