

## LESSON PLAN

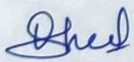
Name of Teacher: Vivek Sheel Verma  
Name of subject: Electrical Machines-III


Branch: Electrical Engg.  
Semester: 5th

Week	Chapters Covered	Topic Covered	Conclusion	Reference
1st	1	<b>Three Phase Induction Motors</b> Constructional features of squirrel cage and wound rotor induction motors, comparison of cage and wound rotor Induction motors Production of rotating magnetic field in a three phase winding	Students will learn about the construction of different types of induction motors.	SK Bhattacharya, Ashfaq Hussain
2nd	1	Principle of operation of induction motor, slip, significance of slip Effect of slip on various parameters of rotor circuit: rotor resistance, rotor inductance, rotor current, rotor frequency	Students will learn about the Operating procedures of induction motor.	J B Gupta, BL Thareja
3rd	1	Torque developed in 3-phase induction: starting torque, condition for maximum torque, running torque and maximum torque Torque-slip and torque-speed curve	Students will have the knowledge about production of torque and torque slip characteristics. Of induction motor.	SK Bhattacharya, Ashfaq Hussain
4th	1	Effect of rotor resistance upon torque slip relationship of slip ring induction motor Starting of 3-phase induction motors using DOL, Star-delta, and Autotransformer Speed control methods of 3-phase induction motor	Students will have the knowledge about the speed control of induction motor.	SK Bhattacharya, Ashfaq Hussain
5th	1	Testing of 3-phase motor on no load and blocked rotor test to find Efficiency Effect of induction motors on system power factor Double cage rotor induction motor and its applications Applications of induction motors	Students will learn about the testing and applications of induction motors.	Ashfaq Hussain, JB Gupta
6th	2	<b>Synchronous Generator (Alternator)</b> Construction Feature of synchronous machine, salient and cylindrical type rotor synchronous machine, comparison between salient and cylindrical rotor machine Advantages of rotating field system Different types of excitation system for synchronous machine: dc excitation system, static excitation system and brushless excitation system	Students will learn about the concepts of Synchronous Generator and its excitation systems.	SK Bhattacharya, Ashfaq Hussain
7th	2	EMF equation of alternator Concentrated and distributed windings, Concept of distribution factor and coil span factor and pitch factor Effect of armature reaction on terminal voltage Concept of synchronous reactance and synchronous impedance	EMF equation and concept of synchronous reactance concept will be understood by the students.	SK Bhattacharya, Ashfaq Hussain



8th	2	Phasor diagram of alternator on load: resistive, inductive and capacitive load Effect of power factor on the terminal voltage of alternator Voltage regulation of alternator, determination of voltage regulation using synchronous impedance method Need and necessary conditions for parallel operation of alternators. Synchronization of alternators with bus bars using Synchroscope method and lamps method.	Students will understand to draw the phasor diagram of alternator on various loads.	VK Mehta, Tarlok Singh
9th	3	Synchronous Motor Introduction: Construction, operating principle Starting methods of synchronous motor Equivalent circuit diagram of synchronous motor	Students will learn the construction and working principle of synchronous motor and its equivalent diagram	SK Bhattacharya, Ashfaq Hussain
10th	3	Effect of change in excitation of a synchronous motor, V-curve of synchronous motor Concept of hunting, causes and prevention of hunting in Synchronous Motor Application of synchronous motor as synchronous condenser, other applications of synchronous motor	Students will get to know about the applications of synchronous motors.	J B Gupta, VK Mehta
11th	4	Single Phase Motors Production of rotating field in 1-phase induction motor: double field revolving theory and cross field theory Operating Principle, Constructional features and Applications of Split-phase, capacitor start, capacitor-start capacitor-run, and Shaded Pole motors	Students will learn about various single phase motors.	SK Bhattacharya, Ashfaq Hussain
12th	4	Reluctance Motor: Construction, working principle & Applications Hysteresis Motor: Construction, working principle & Applications Universal Motor: Construction, working principle & Applications	Students will learn various AC motors such as reluctance, hysteresis and universal motor.	SK Bhattacharya, Ashfaq Hussain
13th	5	Special Purpose Motors Linear Induction Motor & Permanent Magnet Brushless DC Motor (Only working principle and applications)	Students will learn about LIM and PMLDC motor	J B Gupta, VK Mehta
14th	5	Servo Motor (AC and DC) & Stepper Motor (Only working principle), Revision	Students will learn about the construction and working of servo motors	Ashfaq Hussain, JB Gupta

  
 Prepared By  
 (Ea Vivek sheel Verma)

  
 Head of Department