Lesson Plan

Name of the Faculty : Mr. MAHAVIR

Discipline : Electrical Engineering

Semester : 5th

Subject : Electrical Machine-II

Lesson Plan duration : 15 weeks (07.09.2020 to 24.12.2020)

Work load per week : Lecture-04 and Practical-04

Week	Theory		Practical	
	Lecture day	**Topic** (including Assignments and Test)	**Practical No.**	**Experiment name**
1st	1st	Subject introduction and overview	1st	Determination of efficiency by (a) no load test and blocked rotor test on an induction motor (b) direct loading of an induction motor (refer BIS code)
	2nd	**Unit-1 : 3-Phase Induction Motors** Salient constructional features of squirrel cage and slip ring 3-phase induction motors		
	3rd	Principle of operation, slip and its significance		
	4th	Locking of rotor and stator fields		
2nd	5th	Rotor resistance, inductance, emf and current	2nd	Determination of effect of rotor resistance on torque speed curve of an induction motor
	6th	Relationship between rotor copper losses, slip and rotor input power.		
	7th	Power flow diagram of an induction motor		
	8th	Factors determining the torque		
3rd	9th	Torque-slip curve, stable and unstable zones	3rd	Observe the performance of a ceiling fan without capacitor Determine the effect of change in capacitor on the performance of 1-phase induction motor and reverse the direction of motor.
	10th	Effect of rotor resistance upon the torque slip curve		
	11th	Double cage rotor motor and its applications		
	12th	Starting of 3-phase induction motors, DOL		

4th	13th	Star-delta and Auto transformer starter.	4th	To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed
	14th	Causes of low power factor of induction motors		
	15th	Testing of 3-phase motor on no load and blocked rotor test and to find efficiency		
	16th	Continue previous one		
5th	17th	Method of Speed control of induction motor	5th	Determination of the relationship between the voltage and load current of an alternator, keeping excitation and speed constant
	18th	Harmonics and its effects		
	19th	Cogging and crawling in Induction Motors.		
	20th	Specifications and ratings of induction motors.		
6th	21st	Revision and discussion	6th	Determination of the regulation and efficiency of alternator from the open circuit and short circuit test
	22nd	Assignment and Test		
	23rd	**Unit-2- Single Phase Motors** Introduction to 1-Phase Motor Construction characteristics		
	24th	specifications and applications of 1-Phase Motor		
7th	25th	Nature of field produced in single phase induction motor-double revolving field theory.	7th	Determination of the effect of variation of excitation on performance of a synchronous motor
	26th	Split phase induction motor, Capacitor start & capacitor run		
	27th	capacitor start and run motor		
	28th	Shaded pole motor		
8th	29th	Alternating current series motor & its construction, working principle and operation, application.	8th	viva-voce related to electrical machine
	30th	Universal motors and its construction, working principle and operation, application.		
	31st	Single phase synchronous motor: Reluctance motor		
	32nd	Hysteresis motor		

9th	33rd	Revision and discussion	9th	Revision & file checking
	34th	Assignment and Test		
	35th	**Unit-3- Synchronous Machines:** Main constructional features of synchronous machine		
	36th	commutator and brushless excitation system		
10th	37th	Production of rotating magnetic field in a three phase winding	10th	Determination of the effect of variation of excitation on performance of a synchronous motor
	38th	Generation of three phase emf		
	39th	Concept of distribution factor and coil span factor		
	40th	EMF equation		
11th	41st	Armature reaction at unity, lag and lead power factor	11th	Revision & file checking
	42nd	Equivalent circuit diagram of synchronous machine		
	43rd	Concept of voltage regulation.		
	44th	Determination of voltage regulation by synchronous impedance method.		
12th	45th	Operation of single synchronous machine independently supplying a load.	12th	viva-voce related to electrical machine
	46th	Concept of infinite bus bar.		
	47th	Need and necessary conditions of parallel operation of alternators		
	48th	Synchronizing an alternator (Synchro scope method) with the bus bars		
13th	49th	Operation of synchronous machine as a motor	13th	Observe the performance of a ceiling fan without capacitor Determine the effect of change in capacitor on the performance of 1-phase Induction motor and reverse the direction of motor.
	50th	starting methods of synchronous machine		
	51st	Effect of change in excitation of a synchronous motor		
	52nd	V curve		

14th	53rd	Concept of synchronous condenser.	14th	Revision & file checking
	54th	Concept and cause of hunting and its prevention		
	55th	Specification, rating and cooling of synchronous machines Applications of synchronous machines		
	56th	Revision and Assignment		
15th	57th	**Unit-4 Special Purpose Machines:** Construction, working principle and application of linear induction motor,	15th	viva-voce related to electrical machine
	58th	Construction, working principle and application of stepper motor		
	59th	AC Servomotor, Submersible Motor		
	60th	Revision & Discussion and Assignment		