Lesson Plan

Name of Faculty :- Jaipal

Discipline :- Electrical Engineering

Semester :- Fifth Semester

Subject :- Electrical Machine -II

Lesson Plan Duration:- 15 Week

Week	Theory		Practical	
	Lecture Day	Topic	Practical Day	Topic
1st	1st	**Unit-1** **Synchronous Machine** Main constructional features of synchronous machine including commutator and brushless excitation system	1st	**PRACTICAL-1** Demonstration of revolving field set up by a 3-phase wound stator
	2nd	Generation of three phase emf		
	3rd	Production of rotating magnetic field in a three phase winding	2nd	**PRACTICAL-1** Demonstration of revolving field set up by a 3-phase wound stator
	4th	Concept of distribution factor and coil span factor and emf equation Armature reaction at unity, lag and lead power factor		
2nd	5th	Operation of single synchronous machine independently supplying a load - Voltage regulation by synchronous impedance method	3rd	**PRACTICAL-2** To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed
	6th	Need and necessary conditions of parallel operation of alternators Synchronizing an alternator (Synchroscope method) with the bus bars		
	7th	Operation of synchronous machine as a motor –its starting methods		**PRACTICAL-2**

	8th	Effect of change in excitation of a synchronous motor	**4th**	To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed
3rd	**9th**	Concept and Cause of hunting and its prevention	**5th**	**PRACTICAL-3** Determination of the relationship between the voltage and load current of an alternator, keeping excitation and speed constant
	10th	Rating and cooling of synchronous machines		
	11th	Applications of synchronous machines (as an alternator, as a synchronous condenser)	**6th**	**PRACTICAL-3** Determination of the relationship between the voltage and load current of an alternator, keeping excitation and speed constant
	12th	REVISION UNIT-1		
4th	**13th**	REVISION UNIT-1	**7th**	**PRACTICAL-4** Determination of the regulation and efficiency of alternator from the open circuit and short circuit test
	14th	REVISION UNIT-1		
	15th	**Unit-2** **Induction Motors** Salient constructional features of squirrel cage and slip ring 3-phase induction motors	**8th**	**PRACTICAL-4** Determination of the regulation and efficiency of alternator from the open circuit and short circuit test
	16th	Principle of operation, slip and its significance		
5th	**17th**	Locking of rotor and stator fields Rotor resistance, inductance, emf and current	**9th**	**PRACTICAL-5** Synchronization of polyphase alternators and load sharing
	18th	Relationship between copper loss and the motor slip		
	19th	Power flow diagram of an induction motor	**10th**	**PRACTICAL-5** Synchronization of polyphase alternators and load sharing
	20th	Factors determining the torque		
6th	**21st**	Torque-slip curve, stable and unstable zones	**11th**	**PRACTICAL-6** Determination of the effect of variation of excitation on
	22nd	Effect of rotor resistance upon the torque slip relationship		

				performance of a synchronous motor
	23rd	Double cage rotor motor and its applications	**12th**	**PRACTICAL-6** Determination of the effect of variation of excitation on performance of a synchronous motor
	24th	Starting of 3-phase induction motors, DOL, star-delta, auto transformer		
7th	**25th**	Causes of low power factor of induction motors	**13th**	**PRACTICAL-7** Study of ISI/BIS code for 3-phase induction motors
	26th	Testing of 3-phase motor on no load and blocked rotor test and to find efficiency		
	27th	Speed control of induction motor	**14th**	**PRACTICAL-7** Study of ISI/BIS code for 3-phase induction motors
	28th	Harmonics and its effects, cogging and crawling in Induction Motors.		
8th	**29th**	REVISION UNIT-2	**15th**	**PRACTICAL-8** Perform at least two tests on a 3-phase induction motor as per BIS code
	30th	REVISION UNIT-2		
	31st	REVISION UNIT-2	**16th**	**PRACTICAL-8** Perform at least two tests on a 3-phase induction motor as per BIS code
	32nd	**Unit-3** **(Fractional Kilo Watt (FKW)** Motors Single phase induction motors; Construction characteristics and applications		
9th	**33rd**	Nature of field produced in single phase induction motor	**17th**	**PRACTICAL-9** 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)
	34th	Split phase induction motor 1 Capacitors start and run motor		
	35th	2 Shaded pole motor	**18th**	**PRACTICAL-9** 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)
	36th	3 Reluctance start motor		
	37th	Alternating current series motor and universal motors		**PRACTICAL-10**

10th	**38th**	Single phase synchronous motor 1 Reluctance motor	**19th**	Determination of effect of rotor resistance on torque speed curve of an induction motor
	39th	2 Hysteresis motor	**20th**	**PRACTICAL-10** Determination of effect of rotor resistance on torque speed curve of an induction motor
	40th	REVISION UNIT-3		
11th	**41st**	REVISION UNIT-3	**21st**	**PRACTICAL-11** To study the effect of a capacitor on the starting and running of a single-phase induction motor by changing value of capacitor and also to reverse the direction of rotation of a single phase induction motor
	42nd	REVISION UNIT-3		
	43rd	**Unit-4** **Special Purpose Machines**	**22nd**	**PRACTICAL-11** To study the effect of a capacitor on the starting and running of a single-phase induction motor by changing value of capacitor and also to reverse the direction of rotation of a single phase induction motor
	44th	Construction and working principle of linear induction motor		
12th	**45th**	Construction and working principle of stepper motor,	**23th**	REVISION PRACTICAL-1&2
	46th	Construction and working principle of servomotor		
	47th	Construction and working principle of submersible motor	**24th**	REVISION PRACTICAL-1&2
	48th	introduction to energy efficient motors.		
13th	**49th**	REVISION UNIT-4	**25th**	REVISION PRACTICAL-3&4
	50th	REVISION UNIT-4		
	51st	REVISION UNIT-4	**26th**	REVISION PRACTICAL-3&4
	52nd	REVISION UNIT-1		

14th	**53rd**	REVISION UNIT-1		
	54th	REVISION UNIT-2	**27th**	REVISION PRACTICAL-5&6
	55th	REVISION UNIT-2		
	56th	REVISION UNIT-3	**28th**	REVISION PRACTICAL-5&6
15th	**57th**	REVISION UNIT-3		
	58th	REVISION UNIT-4	**29th**	REVISION PRACTICAL-7&8
	59th	REVISION UNIT-4		
	60th	REVISION UNIT-4	**30th**	REVISION PRACTICAL-7&8