Lesson plan

Name of Faculty	Sh. Ashok Kumar
Discipline	Electrical Engineering
Semester	5th
Subject	Electrical Machines-II
Lesson Plan Duration	From Sept2022 to Jan.2023
Work load [Theory + Practical] Per Week	[04+02]

Week	Day	Theory Topic/ Assignment/ Test	Practical Day	Practical
1st	1	**Unit1: Introduction to Induction Motors**	Day1	Determination of efficiency by (a) no load test and blocked rotor test on an induction motor
	2	Constructional features of squirrel cage and slip ring 3-phase induction Motors		
	3	Principle of operation, slip and its significance		
	4	Locking of rotor and stator fields		
2nd	1	Rotor resistance, inductance	Day1	(b) direct loading of an induction motor (refer BIS code)
	2	Emf Equation and current relations		
	3	Relationship between copper loss and motor slip		
	4	Power flow diagram of an induction motor		
3rd	1	Factors determining the torque, Torque-slip curve, stable and unstable zones	Day1	Revision/ file checking
	2	Effect of rotor resistance upon the torque slip relationship		
	3	Double cage rotor motor and its applications		
	4	Starting of 3-phase induction motors, DOL		
4th	1	Star-delta, auto transformer starting	Day1	Determination of effect of rotor resistance on torque speed curve of an induction motor
	2	Causes of low power factor of induction motors		
	3	Testing of 3-phase induction motor on no load		
	4	And blocked rotor test and to find efficiency		
5th	1	Speed control of induction motor	Day1	Revision/ file checking
	2	Harmonics and its effects		
	3	cogging and crawling in Induction Motors		
	4	Revision of important topics		
6th	1	Assignment / Class test	Day1	Observe the performance of a ceiling fan (I-ϕ) induction motor) without capacitor
	2	Problem solution/ Class Test check		
	3	**Unit2: Introduction**		
	4	**Single phase induction motors**		
7th	1	Construction characteristics	Day1	Revision/ file checking
	2	and applications		
	3	Nature of field produced in single phase induction motor		
	4	Split phase induction motors		
8th	1	Capacitors start and run	Day1	To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed
	2	Shaded pole		
	3	Reluctance start motor		
	4	Alternating current series motor		
9th	1	and universal motors	Day1	Revision/ file checking
	2	1-phase synchronous motor Reluctance type		
	3	Hysteresis motor		
	4	Revision of important topics		
10th	1	Assignment / Class test	Day1	Determination of the relationship between the
	2	**Unit3: Introduction Synchronous Machines**		

	3	Constructional features of synchronous machine		voltage and load current of an alternator, keeping excitation and speed constant
	4	Generation of three phase emf		
11th	1	Production of rotating magnetic field in a three phase winding	Day1	Revision/ file checking
	2	Concept of distribution and coil span factor		
	3	Drive Emf equation, synchronous speed		
	4	Armature reaction at unity		
12th	1	lag and lead power factor		
	2	Voltage regulation using synchronous impedance method	Day1	Determination of the regulation and efficiency of alternator from the open circuit and short circuit test
	3	Need and necessary conditions of parallel operation of alternators		
	4	Operation of synchronous machine as a motor –		
13th	1	its starting methods	Day1	Revision/ file checking
	2	Effect of change in excitation of a synchronous motor		
	3	Concept and Cause of hunting and its prevention		
	4	Rating and cooling of synchronous machines		
14th	1	Applications of synchronous machines (as an alternator, as a synchronous condenser)	Day1	Determination of the effect of variation of excitation on performance of a synchronous motor
	2	Revision of important topics		
	3	Assignment / Class test		
	4	Problem solution/ test check		
15th	1	**Unit4:Special Purpose Machines**	Day1	Quiz /viva-voice related to electrical machine
	2	Construction and working principle of linear induction motor		
	3	Stepper motor		
	4	Servomotor		
16th	1	Submersible motor	Day1	Quiz /viva-voice related to electrical machine
	2	Introduction to energy efficient motors		
	3	Revision/Review/Test of old HSBTE Papers		
	4	Revision/Review/Test of old HSBTE Papers		