

Lesson plan

Name of Faculty		Sh. Anand Kumar		
Discipline		Electrical Engineering		
Semester		5 th		
Subject		Electrical Machines-II		
Lesson Plan Duration		From Sept2023 to Jan.2024		
Work load [Theory + Practical] Per Week		[04+02]		
Week	Day	Theory Topic/ Assignment/ Test	Practic al Day	Practical
1 st	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		
2 nd	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		
3 rd	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		
4 th	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		
5 th	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		
6 th	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		
7 th	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		
8 th	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		
9 th	1	and universal motors	Day1	Revision/ file checking
	2	1-phase synchronous motor Reluctance type		
	3	Hysteresis motor		
	4	Revision of important topics		
10 th	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		
11 th	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		
12 th	1	lag and lead power factor	Day1	Determination of the regulation and efficiency of alternator from the open circuit and short circuit test
	2	Voltage regulation using synchronous impedance method		
	3	Need and necessary conditions of parallel operation of alternators		
	4	Operation of synchronous machine as a motor –		
13 th	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		
14 th	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		
15 th	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		
16 th	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		