Name of the Faculty

Discipline ELECTRICAL ENGG.

Semester 4TH

Subject ELECTRICAL MACHINE - I

Lesson Plan Duration 15 weeks

Theory		Practical	
Lecture Day	Topic(including assignment/test)	Practical day	Topic
1st (Unit-1)	• Will Discuss Learning outcomes of Electrical Machine subject.	1st	Introductionof EM lab various specifications of Motors, safety precautions etc.
2st	• Introduction to Electrical Machines		
	• Definition of motor and generator, concept of torque		
3rd	• Electro-magnetically induced emf.		
4th	• Torque development due to alignment of two fields and the concept of torque angle		
5th	• Elementary concept of an electrical machine	2nd	Measurement of the angular displacement of the rotor of a slip-ring induction motor on application of DC to stator of motor winding in sequence and simultaneously to each phase of rotor winding
6th	• Comparison of generator and motor		
7th(Unit-II)	• Introduction of DC machines, its types		
8th	• Construction of DC machines		
9th	• Armature winding and its types	3rd	Speed control of dc shunt motor
10th	• Commutator and its function for generator and motor action		(i) Armature control method
11th	• Factors determining induced EMF		(ii) Field control method
12th	• Factors determining electromagnetic torque		
13th	• DC generator and its types	4th	Evaluation of above practical's.
14th	• Voltage buildup in DC gen.		

15th	• Back emf, its significance , relationship between terminal voltage and back emf		
16th	• Armature reaction		
17th	• Commutation methods to improve commutation	5th	Study of dc series motor with starter (to operate the motor on no load for a moment)
18th	• Types of DC Motors, its performace, Characteristic of DC motors		
19th	• Speed control of DC motors, starters for DC motors(3 point and 4 point)		
20th	• Application of DC Motors, losses in DC machines		
21th	• Swinburne's test to find out losses	6th	Study of 3 point starter for starting D.C. shunt motor.
	• First assignment will be given and tentative 1st sessional test/evaluation of sessional marks etc.		
22th	• Display and analysis of sessional marks		
23th(unit-3)	• Introduction of Transformers, types of T/Fm		
24th	• Construction of single phase transformer,		
25th	• Parts of a transformer	7th	To perform open circuit and short circuit test for determining: (i) equivalent circuit (ii) the regulation and(iii)efficiencyof a transformerfrom the data obtained from open circuit and short circuit test at full load
26th	• Working principle of transformer		
27th	• EMF equation of T/fm		
28th	• Transformer at no load and its phasor diagram		
29th	• Transformer – neglecting voltage drop in the windings – Ampere turn balance – its phasor diagram	8th	Evaluation of above practicals.
30th	• Mutual and leakage fluxes, leakage reactance		
31th	• Transformer on load, voltage drops and its phasor diagram		
32th	• Equivalent circuit diagrams of T/fm, Relation between induced emf and terminal voltage, regulation of a transformer mathematical relation		

33th	• Losses in transformer, various tests OC/SC Test to find out these losses and efficiency etc.	9th	Revision of above practicals for left out students.
34th	• Auto transformer, construction,working and its application		
35th	• Different type of transformer including dry type transformer		
36th	• second assignment will be given and tentative 2nd sessional test/evaluation of sessional marks etc		
37th	• display and analysis of sessional marks.	10th	Checking the polarity of the windings of a three phase transformer and connecting the windings in various configurations
38th (unit-4)	• construction of 3-phase transformer		
39th	• accessories of transformers such as Conservator, breather,		
40th	• BuchholzRelay, Tap Changer (off load and on load) (Brief idea)		
41th	• Types of three phase transformer i.e. delta-delta, delta-star	11th	Finding the voltage and current relationships of primary and secondary of a three phase transformer under balanced load in various configurations conditions such as (a) Star-star (b) Star delta (c) Delta star (d) Delta-Delta configuring conditions
42th	• ..star-delta,star-star.		
43th	• Parallel operation of transformer, its need		
44th	• Parallel operation conditions will be discussed		
45th	• Any left out topic due to Cl/leave etc.	12th	Evaluation of above practicals.
46th	• Same as above		
47th	• Local visit to complaint centre to show parts /accessories of transformer		
48th	• On load/off load tap changer		
49th	• Distribution /power transformer	13th	Revision of above practicals for left out students if any.
50th	• Cooling of transformer		
51th	• 3rd assignment will be given		
52th	• Previous state boards question will be carried out, any other left out topic		
53th	• 3rd sessional test	14th	Viva-voce/preparation of practical sessional marks.
54th	• Evaluation of 3rd test		

55th	• Display/analysis of 3rd sessional test		
56th	• Remedial will be taken if any shortcomings found		
57th	• Seminal/group discussion as per evaluation scheme		
58th	• -do-		
59th	• -do-		
60th	• -do-		