LESSON PLAN

Discipline: Elect. Engg.	Semester: Fourth(4 th)	Name of the Faculty: Er T K Swain
Subject: Energy	No. of days per Week class	Semester from Date: 14.02.23 to Date: 23.05.23
Conversion-I	allotted: Six (6)	No. of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
	1 st	Ch-01-(D.C.Generator): Operation Principle of generator Constructional features of D.C machine
	2 nd	Yoke, pole & field winding, Armature, Commutator
st 1	3 rd	Armature winding, Back, Front, Resultant & Commutator pitch
	4 th	Simple Lap & wave winding ,Dummy Coils.
	5 th	Derive E.M.F equation of a d.c. generator (Solve problems)
	6 th	Different Types of D.C M/C a. Self-Excited with ckt. Diagram with voltage equation
	st 1	b. Separately Excited (Shunt & Series) with ckt.Diagram & equations.C. Separately Excited (Long, short shunt & also the cumulative & differential compound M/C) with Ckt.Diagram & equations.
	2 nd	Numerical Problems
2 nd	3 rd	Explanation of Armature reaction in D.C M/C &It's remedies.
	4 th	Commutation and methods of improving commutation a (Resistance Commutation))
	5 th	b. (Voltage Commutation) Explanation of Inter poles & Compensating windings
	6 th	Characteristics Applications of D.C Generators: Internal Characteristic/OCC/LCC of shunt Generator & Application Internal Characteristic/OCC/LCC of Series Generator & Application
	1 st	c. Internal Characteristic/OCC/LCC of Compound Generator& Application

rd	2 nd	Voltage built up & Critical resistance of a D.C shunt generator
	3 rd	Losses and efficiency in a d.c generator
3 rd	4 th	Power Stage diagram, Efficiency & condition for max Efficiency.
	5 th	Numerical problems
	6 th	Numerical problems
	1 st	Parallel operation of D.C. Generators.
th 4	2 nd	Definition of Parallel operation & it's condition Parallel operation of D.C. Shunt generator
4	3 rd	Parallel operation of D.C. Series generator
	4 th	Numerical problems
	5 th	Application of different types of D.C Generators, Uses of D.C generators
	6 th	Possible question answer discussion
	1 st	Monthly test-01
	2 nd	Ch-02-(D.C.Motor) :
		Basic working Principle of D.C. Motor
	3 rd	Significance of back EMF, symbol, ckt diagram & voltage equation
5 th	th 4	Voltage Equation of Motor & Condition for maximum power developed.
	5 th	Types of D.C Motor Definition,Ckt diagram & voltage equation of separately excited & shunt & series motor b. Definition,Ckt diagram & voltage equation of compound motor
	6 th	Derive Torque equation of D.C Motor (Gross & shaft
6 th	st	torque) Numerical problems
	1	Traineriear problems
	2 nd	Characteristics of D.C. shunt Motors & Applications: a.Speed current Characteristic b.Torque –Current Characteristic c.Speed –Torque characteristic
	3 rd	Characteristics of D.C. Series Motors & Applications: a.Speed current Characteristic b.Torque –Current Characteristic c.Speed –Torque characteristic

4 (a) Speed current Characteristic (b), Torque - Current Characteristic (c). Speed - Torque characteristic 5th Numerical problems 6th Methods of starting of D.C. Motors (introduction) a.3-point starter for starting shunt motor 1st b.4-point starter for starting compound motor Monthly test-02 7th Speed Control Of D.C Motors a. Speed Control of d.c. Shunt Motor by flux & armature control method 7th Numerical problems 5th Numerical problems 5th Determination of efficiency of ad.c. Motor by break test method 1st Determination of efficiency of a d.c. Motor by Swinburne's test method 2nd Numerical problems 3th Determination of efficiency of a d.c. Motor by Swinburne's test method 2nd Numerical problems 3th Losses & power stage diagram of D.C. Motor 4th uses of d.c motors. & Numerical problems 5th Possible question answer discussion 6th Ch-03-(Single phase Transformer): Introduction, Definition & working principle Constructional details: Different parts such as core, windings. 2nd Conservator, tank breather etc. 3th Explain types of cooling methods State the procedure for care & Maintenance		th	Characteristics of D.C. Compound Motors & Applications:
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Derivation of EMF equation	9 th	5 ¹¹¹	Derivation of EMF equation
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6 th Voltage transformation ratio of an ideal T/F		6^{th}	Voltage transformation ratio of an ideal T/F
voluge transformation ratio of an idear 1/1			, stage demotormation ratio of an ideal 1/1

10 th	st 1	Explanation of an ideal T/F on no load with phasor diagram
	2 nd	Numerical problems
	3 rd	Monthly test-03
	4 th	Phasor diagram of an Ideal T/F on load (UPF, Lagging & leading P.F)
	5 th	Explanation of equivalent resistance, reactance & impedance
	6 th	Phasor diagram of practical T/F with winding resistance &magnetic leakage foru.p.f,lagging & leading p.f.
	1 st	Equivalent circuit diagram
	2 nd	Derivation of approximate & exact voltage drop of a T/F
11 th	3 rd	Calculation of voltage regulation at different power factors
	4 th	Losses & efficiency of a 1-ph T/F
	5 th	Open circuit test & S.C test of a 1-ph T/F
	6 th	condition for maximum of 1-ph T/F & load corresponding to max efficiency.
	1 st	Numerical problems
	2 nd	Explanation of all day efficiency
12 th	3 rd	Formula for o/p power & losses & numerical problems
	4 th	Parallel operation of 1-ph T/F
	5 th	Possible question answer discussion
	6 th	Ch-04-(Auto Transformer)
	st	Constructional feature auto transformer,
	1	Working principle of an auto transformer,
	2 nd	Saving of copper in an auto T/F
	3 rd	Monthly test-04

13 th	4 th	Uses of an Auto T/F
	5 th	On-Load Tap changer of the T/F
	6 th	Off-Load Tap changer of the T/F
	st	Possible question answer discussion
	st 1	rossible question answer discussion
	2 nd	Ch-05-(Instrument Transformer)
	2	Definition, Construction of CT,PT & Ratio Error
14 th	3 rd	Phase angle Error & Burden.
	th	Uses of CT & PT
	4	
	5 th	Possible question answer discussion
	6 th	Revision
	1 st	Revision
	2 nd	Revision
	3 rd	Revision
15 th	4 th	Revision
	5 th	Revision
	6 th	Revision

Syllabus Coverage up to Inter assessment – Chapter-01 & 02.