

22EE370	DC MACHINES & TRANSFORMERS LABORATORY
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Category	L	T	P	Credit
PCC	-	-	2	1

Preamble

This laboratory gives a practical exposure to the students to learn the characteristics of Transformers and DC Machines that are used nowadays in Electrical Systems. The students also learn to select the suitable DC Electrical Machines for an application based on its characteristics. To familiarize the standard testing procedures of DC Machines and Transformers.

Prerequisite

NIL

Course Outcomes

On the successful completion of the course students will be able to

CO Number	Course Outcome Statement	Weightage in %
CO1	Obtain the characteristics of DC Generator (Shunt, Series & Compound) independently	20
CO2	Obtain the characteristics of DC Motor (Shunt & Series) independently	20
CO3	Determine the Efficiency of DC Machine and calculate the maximum efficiency	10
CO4	Obtain the Voltage Regulation and Efficiency characteristics of Transformer independently	20
CO5	Sketch the Circuit Model of Transformer	20
CO6	Obtain the Thermal & Vibration characteristics of DC Machines and Transformers	10

*** Weightage depends on Bloom's Level, number of contact hours,

Mapping with Programme Outcomes and Programme Specific Outcomes

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	S	S	M	M	S				S	S				S	
CO2	S	S	M	M	S				S	S				S	
CO3	S	M	L	L	S				S	S				S	
CO4	S	M	L	L	S				S	S				S	

CO5	S	S	M	M	S				S	S				S	
CO6	S	S	M	M	S				S	S				S	

S- Strong; M-Medium; L-Low

Assessment Pattern: Cognitive Domain

Cognitive Levels	Model Examination	Terminal Examination
Remember		
Understand	10	10
Apply	40	40
Analyse	20	20
Evaluate		
Create		

Assessment Pattern: Psychomotor

Psychomotor Skill	Miniproject /Practical Component/Observation
Perception	
Set	
Guided Response	10
Mechanism	20
Complex Overt Responses	
Adaptation	
Origination	

List of Experiments/Activities with CO Mapping

Exp.No	Name	CO
DC Machine		
1	Load characteristics of DC Generators	CO1
2	Methods of Excitation and Voltage Control of DC Generators	CO1
3	Measuring the resistance of Armature and Field Windings	CO1
4	Methods of Starting and Speed Control of DC Motors	CO2
5	Load Characteristics of DC Motors	CO2
6	Swinburne's & Hopkinson's tests	CO3
7	Thermal and Vibration Study of DC Machines	CO6
Transformer		
8	Performance estimation using various load	CO4
9	Performance calculation using equivalent circuit	CO4
10	Measurement of Winding Resistance and Inductance	CO5
11	Sumpner's test / Polarity Test	CO5
12	Thermal and Vibration Study of Transformer	CO6

Reference Books

1. D.P.Kothari & I.J.Nagrath, "Electrical Machines", Tata-McGrawhill, Newdelhi, 5th Edition, 2010.
2. R.K.Rajput, "Electrical Technology", Laxmi Publications, 3rd edition, 2005.
3. Vincent Deldoro, "Electromechanical Energy Conversion" PHI III edition,
4. M.G.Say, Theory and performance of electrical machines, Tata-Mcgraw hill LR2

Course Designers:

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