UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

LESSON PLAN

SUBJECT:|EEPC207 TH:4: DC MACHINES & TRANSFORMERS

PREPAREDBY: Er. RUBY SOREN

DESIGNATION: LECTURER IN ELECTRICAL ENGINEERING

DEPARTMENT OF ELECTICAL ENGINEERING

[Session: 2025-26]

LESSON PLAN		
Name of the Teaching faculty:		Er. Ruby Soren
Discipline:		Electrical Engineering
Semester:		3rd
Subject:		EEPC207 TH:4: DC Machines and Transformers
No of Days/Week Class Allotted:		3
Lesson Plan duration:		15 Weeks (From Date: 14.07.2025 to Date: 15.11.2025
Weeks	**Lecture Days**	**Topics to be covered**
1	1st	**Unit 1: D.C.Generator:** Construction ,parts ,materials and their functions
	2nd	Principle of operation of DC generator; Fleming's right hand rule
	3rd	Derive the emf equation of DC Generator
2	1st	Schematic diagrams of different types of DC generator
	2nd	Numerical
	3rd	Armature reaction
3	1st	Commutation
	2nd	Commutation
	3rd	Applications of D.C.generators CLASS TEST -01
4	1st	**Unit 2: D.C.Motors** Types of DCmotors
	2nd	Fleming's left hand rule Principle of operation of Back e.m.f. and its significance
	3rd	Voltage equation of DC motor
5	1st	Torque and Speed; Armature torque, Shaft torque ,BHP
	2nd	Brake test, losses, efficiency
	3rd	DC motor starters: Necessity, two point and three point starters
6	1st	Speed control of DC shunt and series motor: Flux and Armature control
	2nd	Brushless DC Motor :Construction and working
	3rd	CLASS TEST-02
7	1st	**Unit 3: Single Phase Transformers** Types of transformers: Shell type and core type
	2nd	Construction: Parts and functions
	3rd	Materials used for different parts: CRGO, CRNGO ,HRGO, amorphouscores
8	1st	Transformer: Principle of operation
	2nd	EMF equation of transformer: Derivation, Voltage transformation ratio
	3rd	Significance of transformer ratings

Weeks	Lecture Days	Topics to be covered
9	1st	Transformer No-load and on-load phasor diagram, Leakage reactance
	2nd	Equivalent circuit of transformer: Equivalent resistance and reactance
	3rd	Voltage regulation and Efficiency: Direct loading, OC/SC method, Allday efficiency
10	1st	Voltage regulation and Efficiency: Direct loading, OC/SC method, Allday efficiency
	2nd	**CLASS TEST-03**
	3rd	**Unit 04:Three Phase Transformers** Bank of three single phase transformers,(Y-Y,Δ-Δ,Δ-Y,Y- Δ)
11	1st	Single unit of three phase transformer
	2nd	Distribution and Power transformers: Construction and cooling,
	3rd	Criteria for selection of distribution transformer, and power transformer.
12	1st	Need of parallel operation of three phase transformer
	2nd	Conditions for parallel operation.
	3rd	Polarity tests on mutually inductive coils and single phase transformers
13	1st	Polarity test, Phasing out test on Three- phase transformer
	2nd	**CLASS TEST-04**
	3rd	**Unit 05: Special Purpose Transformers** Single phase auto transformers: Construction, working and applications.
14	1st	Single phase auto transformers: Construction, working and applications.
	2nd	Three phase auto transformers: Construction, working and applications.
	3rd	Three phase auto transformers: Construction, working and applications.
15	1st	Isolation transformer: Constructional Features and applications
	2nd	**CLASS TEST-05**
	3rd	Previous Year Question Answer discussion