C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN
Session (2025-2026)

Discipline: ELECTRICAL ENGINEERING	**Semester:** 3RD Semester, Winter/2025	**Name of the Faculty:** PALLAVI MISHRA ASST.PROF **Email ID:** **Pallavi.mishra@cvrp.edu.in**
Subject Name with code: DC MACHINES AND TRANSFORMERS (EEPC207)	**No. of Days/week:** 03 **Total No. of Class (Required):** 45	**Start Date:14.07.2025** **End Date:15.11.2025**

Week	Class Day	Brief description of the Topic/Chapter to be taught
1st	1st	1. **DC Generators** D.C. generator: construction, parts, materials and their functions
	2nd	Principle of operation of DC generator
	3rd	Fleming's right hand rule
2nd	1st	Derive the emf equation of DC Generator
	2nd	Schematic diagrams of different types of DC generator
	3rd	Armature reaction
3rd	1st	Armature reaction
	2nd	Commutation
	3rd	Applications of D.C. generators
4th	1st	2. **D.C. Motors** D.C. motor: Types of DC motors
	2nd	Fleming's left hand rule
	3rd	Principle of operation of Back e.m.f. and its significance
5th	1st	Voltage equation of DC motor
	2nd	Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency

	3rd	DC motor starters: Necessity, two point and three point starters
6th	1st	Speed control of DC shunt and series motor: Flux and Armature control
	2nd	Brushless DC Motor: Construction and working
	3rd	Revision
7th	1st	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, amorphous cores
8th	1st	Transformer: Principle of operation
	2nd	EMF equation of transformer: Derivation, Voltage transformation ratio
	3rd	Significance of transformer ratings
9th	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, All day efficiency
10th	1st	Quiz
	2nd	4. **Three Phase Transformers** Bank of three single phase transformers,(Y-Y,Δ-Δ ,Δ-Y, Y- Δ)
	3rd	Single unit of three phase transformer
11th	1st	Distribution and Power transformers: Construction and cooling,
	2nd	Criteria for selection of distribution transformer, and power transformer.
	3rd	Need of parallel operation of three phase transformer
12th	1st	Conditions for parallel operation.
	2nd	Polarity tests on mutually inductive coils and single phase transformers
	3rd	Polarity test, Phasing out test on Three-phase transformer
13th	1st	Question Discussion
	2nd	5. **Special Purpose Transformers** Single phase and three phase autotransformers: Construction, working and applications.
	3rd	Single phase and three phase autotransformers: Construction, working and applications.
14th	1st	Isolation transformer: Constructional Features and applications
	2nd	Isolation transformer: Constructional Features and applications

	3rd	Isolation transformer: Constructional Features and applications
15th	1st	Question Discussion
	2nd	Question Discussion
	3rd	Question Discussion

Signature of the Faculty

Signature of the H.O.D