

C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2026-2027)

Discipline: ELECTRICAL ENGINEERING	Semester: 3 RD Semester, Winter/2026	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: 01.07.2026 End Date: 05.11.2026

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

	3 rd	DC motor starters: Necessity, two point and three point starters
6th	1st	Speed control of DC shunt and series motor: Flux and Armature control
	2 nd	Brushless DC Motor: Construction and working
	3 rd	Revision
7th	1st	3. Single Phase Transformers Types of transformers: Shell type and core type
	2 nd	Construction: Parts and functions
	3 rd	Materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores
8th	1st	Transformer: Principle of operation
	2 nd	EMF equation of transformer: Derivation, Voltage transformation ratio
	3 rd	Significance of transformer ratings
9th	1st	Transformer No-load and on-load phasor diagram, Leakage reactance
	2 nd	Equivalent circuit of transformer: Equivalent resistance and reactance
	3 rd	Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency
10th	1st	Quiz
	2 nd	4. Three Phase Transformers Bank of three single phase transformers, (Y-Y, Δ - Δ , Δ -Y, Y- Δ)
	3 rd	Single unit of three phase transformer
11th	1st	Distribution and Power transformers: Construction and cooling,
	2 nd	Criteria for selection of distribution transformer, and power transformer.
	3 rd	Need of parallel operation of three phase transformer
12th	1st	Conditions for parallel operation.
	2 nd	Polarity tests on mutually inductive coils and single phase transformers
	3 rd	Polarity test, Phasing out test on Three-phase transformer
13th	1st	Question Discussion
	2 nd	5. Special Purpose Transformers Single phase and three phase autotransformers: Construction, working and applications.
	3 rd	Single phase and three phase autotransformers: Construction, working and applications.
14th	1st	Isolation transformer: Constructional Features and applications
	2 nd	Isolation transformer: Constructional Features and applications

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



Signature of the Faculty



Signature of the H.O.D