



SYNERGY SCHOOL OF ENGINEERING
DEPARTMENT OF ELECTRICAL ENGINEERING

Discipline: electrical engineering Subject: - DC machine and transformer	Semester: - 3 rd Sem EE	Name of the teaching faculty: - MR. AMARENDRA BEHERA
	No. of Days/week class Allotted: -3	No. of weeks: -15 SESSION-2026-2027 WINTER Starting date- 04.07.2026 Closing date- 05.11.2026
	No. of week	No. of class
1	1 ST	Topic to be Taught D.C. generator: construction, parts, materials and their functions
	2 ND	Principle of operation of DC generator
	3 RD	Fleming's right-hand rule
2	1 ST	Derive the emf equation of DC Generator
	2 ND	Schematic diagrams of different types of DC generator
	3 RD	Armature reaction
3	1 ST	Commutation
	2 ND	Applications of D.C. generators
	3 RD	Applications of D.C. generators
4	1 ST	D.C. motor Types of DC motors
	2 ND	Types of DC motors
	3 RD	Fleming's left-hand rule
5	1 ST	Principle of operation of Back e.m.f. and its significance
	2 ND	Voltage equation of DC motor
	3 RD	Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency
6	1 ST	DC motor starters: Necessity, two point and three-point starters
	2 ND	Speed control of DC shunt and series motor: Flux and Armature control
	3 RD	Brushless DC Motor: Construction and working
7	1 ST	Single phase transformer
	2 ND	Types of transformers: Shell type and core type
	3 RD	Construction: Parts and functions
8	1 ST	Materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores
	2 ND	Transformer: Principle of operation
	3 RD	EMF equation of transformer: Derivation, Voltage transformation ratio
9	1 ST	Significance of transformer ratings
	2 ND	Transformer No-load and on-load phasor diagram, Leakage reactance
	3 RD	Equivalent circuit of transformer: Equivalent resistance and reactance
10	1 ST	Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency
	2 ND	Three phase transformers
	3 RD	Bank of three single phase transformers, (Y-Y, Δ-Δ, Δ-Y, Y-Δ)

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11	1 ST	Single unit of three phase transformer
	2 ND	Distribution and Power transformers: Construction and cooling
	3 RD	Criteria for selection of distribution transformer, and power transformer.
12	1 ST	Need of parallel operation of three phase transformer
	2 ND	Polarity tests on mutually inductive coils and single-phase transformers
	3 RD	Polarity test, Phasing out test on Three-phase transformer
13	1 ST	Conditions for parallel operation
	2 ND	Special purpose transformer
	3 RD	Single phase and three phase autotransformers
14	1 ST	Single phase and three phase autotransformers Construction,
	2 ND	Single phase and three phase autotransformers working and applications.
	3 RD	Isolation transformer
15	1 ST	Isolation transformer: Construction
	2 ND	Isolation transformer: Constructional Features
	3 RD	Isolation transformer: Constructional Features and applications

Amarendra Dehery

Prepared By

02.06.2026

M.M. Panda
11/06/2026

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