SYNERGY SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRICAL ENGINEERING

Discipline: electrical engineering	Semester: - 3rd Sem EE	Name of the teaching faculty: - AMARENDRA BEHERA
Subject: - DC machine and transformer	No. of Days/week class Allotted: -3	No. of weeks: -15 SESSION-2025-2026 WINTER Starting date- 15/07/25 Closing date- 15/11/25
No. of week	**No. of class**	**Topic to be Taught**
1	1ST	D.C. generator: construction, parts, materials and their functions
	2ND	Principle of operation of DC generator
	3RD	Fleming's right-hand rule
2	1ST	Derive the emf equation of DC Generator
	2ND	Schematic diagrams of different types of DC generator
	3RD	Armature reaction
3	1ST	Commutation
	2ND	Applications of D.C. generators
	3RD	Applications of D.C. generators
4	1ST	D.C. motor Types of DC motors
	2ND	Types of DC motors
	3RD	Fleming's left-hand rule
5	1ST	Principle of operation of Back e.m.f. and its significance
	2ND	Voltage equation of DC motor
	3RD	Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency
6	1ST	DC motor starters: Necessity, two point and three-point starters
	2ND	Speed control of DC shunt and series motor: Flux and Armature control
	3RD	Brushless DC Motor: Construction and working
7	1ST	Single phase transformer
	2ND	Types of transformers: Shell type and core type
	3RD	Construction: Parts and functions
8	1ST	Materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores
	2ND	Transformer: Principle of operation
	3RD	EMF equation of transformer: Derivation, Voltage transformation ratio
9	1ST	Significance of transformer ratings
	2ND	Transformer No-load and on-load phasor diagram, Leakage reactance
	3RD	Equivalent circuit of transformer: Equivalent resistance and reactance
10	1ST	Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency
	2ND	Three phase transformers
	3RD	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	Polarity tests on mutually inductive coils and single-phase transformers
	3RD	Polarity test, Phasing out test on Three-phase transformer
13	1ST	Conditions for parallel operation
	2ND	**Special purpose transformer**
	3RD	Single phase and three phase autotransformers
14	1ST	Single phase and three phase autotransformers Construction,
	2ND	Single phase and three phase autotransformers working and applications.
	3RD	Isolation transformer
15	1ST	Isolation transformer: Construction
	2ND	Isolation transformer: Constructional Features
	3RD	Isolation transformer: Constructional Features and applications

Signature of the faculty

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