

Lesson Plan: DC Machines and Transformers

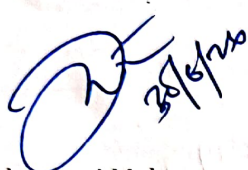
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Semester: 3rd (Winter 2026)

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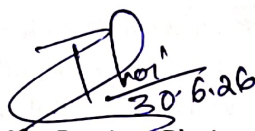
WEEK	DAYS	TOPICS
Week 1	1	DC Generator: construction, parts, materials and functions
	2	Principle of operation of DC generator and Fleming's Right Hand Rule
	3	EMF equation of DC generator: derivation
Week 2	4	Types of DC generators and schematic diagrams
	5	Armature reaction and its effects
	6	Commutation and applications of DC generators
Week 3	7	DC motors: types and construction
	8	Fleming's Left Hand Rule and working principle
	9	Back EMF and voltage equation of DC motor
Week 4	10	Torque, speed, armature torque and shaft torque
	11	BHP, brake test, losses and efficiency
	12	DC motor starters: necessity, two point and three point starters
Week 5	13	Speed control of DC shunt and series motors
	14	Flux control and armature control methods
	15	Brushless DC motor: construction and working
Week 6	16	Introduction to single phase transformers and types
	17	Shell type and core type transformer construction
	18	Transformer parts, functions and materials
Week 7	19	CRGO, CRNGO, HRGO and amorphous core materials
	20	Transformer principle of operation
	21	EMF equation derivation and transformation ratio
Week 8	22	Transformer ratings and significance
	23	No-load and on-load phasor diagrams
	24	Leakage reactance and equivalent circuit
Week 9	25	Equivalent resistance and reactance
	26	Voltage regulation and efficiency
	27	Direct loading and OC/SC methods
Week 10	28	All day efficiency of transformer
	29	Three phase transformer bank connections
	30	Y-Y, Δ - Δ , Δ -Y and Y- Δ connections
Week 11	31	Single unit three phase transformer
	32	Distribution and power transformer construction
	33	Transformer cooling methods
Week 12	34	Selection criteria of distribution and power transformers
	35	Parallel operation of three phase transformers

	36	Conditions for parallel operation
Week 13	37	Polarity test and phasing out test
	38	Autotransformer construction and working
	39	Applications of single and three phase autotransformers
Week 14	40	Isolation transformer: construction and applications
	41	Revision of DC machines
	42	Revision of transformers
Week 15	43	Numerical problem solving and discussion
	44	Laboratory and assessment discussion
	45	Final revision and course outcome assessment



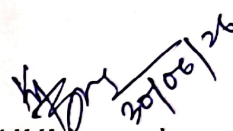
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