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DEPARTMENT OF ELECTRICAL ENGINEERING

Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2025-26 DC MACHINES AND TRANSFORMERS

Course Code : EEPC207 (Th.4)	Semester : 3rd
Total Periods : 45 Hours	Examination : 3 Hours
Theory Periods : 3 P/Week	Progressive Assessment: 30 Marks
Maximum Marks : 100	End Semester Examination : 70 Marks
Semester From Date : 14/07/2025	To Date : 15/11/2025 (approx.)
Name of the Teaching Faculty: Er. Biswajit Mallik, Sr. Lect (ELECT)	

WEEK	PERIOD	TOPIC
1st	1 st	D.C generators D.c. generator: construction, parts, materials and their functions
	2 nd	D.C. generator: construction, parts, materials and their functions
	3 rd	Principle of operation of DC generator
2nd	1 st	Fleming's right hand rule
	2 nd	Derive the emf equation of DC Generator
	3 rd	Schematic diagrams of different types of DC generator
3 rd	1 st	Armature reaction
	2 nd	Commutation
	3 rd	Applications of D.C. generators
4 th	1 st	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
5 th	1 st	Voltage equation of DC motor
	2 nd	Torque and Speed; Armature torque, Shaft torque, BHP
	3 rd	Brake test, losses, efficiency
6 th	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 th	1 st	Single Phase Transformers Types of transformers: shell type and core type
	2 nd	Construction: Parts and functions
	3 rd	Construction: Parts and functions

8 th	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 th	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 th	1 st	Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency
	2 nd	Three Phase Transformers Bank of three single phase transformers, ($y-y, \delta-\delta, \delta-y, y-\delta$)
	3 rd	Single unit of three phase transformer
11 th	1 st	Distribution and Power transformers: Construction and cooling
	2 nd	Distribution and Power transformers: Construction and cooling
	3 rd	Criteria for selection of distribution transformer, and power transformer
12 th	1 st	5 Need of parallel operation of three phase transformer
	2 nd	Conditions for parallel operation
	3 rd	Polarity tests on mutually inductive coils and single phase transformers
13 th	1 st	Polarity test, Phasing out test on Three-phase transformer
	2 nd	Special Purpose Transformers Single phase: Construction
	3 rd	Single phase: Working
14 th	1 st	Single phase: Applications
	2 nd	Three phase autotransformers: Construction
	3 rd	Three phase autotransformers: Working
15 th	1 st	Three phase autotransformers: Applications
	2 nd	Isolation transformer: Constructional Features.
	3 rd	Isolation transformer: Applications

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