

on Plan & Work-done Diary for AY:2026-27, ODD Semester

Course with Code: Transformers and Generators & 1BEE305					Faculty: Dr. Praveen Kumar M		Semester & Section: III	
Class No.	Date planned (DD/MM)	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
MODULE-1								
1		Introduction to Transformers: Necessity of transformers, principle of operation, Constructional details of core and windings	ICT					
2		EMF equation, equivalent circuit	Chalk and Talk					
3		Operation of practical transformer under no-load and on load with phasor diagrams, Numerical	ICT					
4		Losses, Variation of losses with load, methods of reducing losses. Efficiency and condition for maximum efficiency. Reasons for rating of transformers in kVA	ICT					
5		Open circuit and short circuit tests, calculation of equivalent circuit parameters, Numerical	ICT					
6		Polarity test and Sumpner's test. Numerical	Chalk and Talk					
7		Predetermination of efficiency, voltage regulation and its significance. Numerical	Chalk and Talk					
8		Parallel operation of single-phase transformers.	Chalk and Talk					

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MODULE-2								
9		Three-phase Transformers: Introduction, Constructional features of three-phase transformers.	ICT					
10		Transformer connection for three phase operation– star/star	ICT					
11		Transformer connection for three phase operation– delta/delta	ICT					
12		Transformer connection for three phase operation– star/delta and delta/star	ICT					
13		Transformer connection for three phase operation– delta/open delta, Comparison of three-phase transformer connections.	ICT					
14		Vector group, Terminal Labelling	Chalk and Talk					
15		Parallel Operation of Transformers: Necessity of Parallel operation, conditions for parallel operation– Single phase and three phase.	Chalk and Talk					
16		Load sharing in case of similar and dissimilar transformers. Numerical	Chalk and Talk					
17		Numerical problems on Y–Y, Δ – Δ , Y– Δ , Δ –Y and V–V connections, vector groups, transformer capacity, parallel operation and load sharing	Chalk and Talk					

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MODULE-3								
18		Voltage regulation by Tap changing off-load/no-load tap changer,	ICT					
19		On-Load Tap Changer (OLTC)	ICT					
20		Scott connected transformer	ICT					
21		Necessity of transformers with tertiary windings and transformer Noise.	Chalk and Talk					
22		Autotransformers – Construction and Principle	ICT					
23		Autotransformer – Copper Economy and Equivalent Circuit	Chalk and Talk					
24		Instrument Transformers – CT and PT	Chalk and Talk					
25		Special-Purpose Transformers: Welding transformers, introduction to pulse transformer	Chalk and Talk					

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MODULE-4								
26		Synchronous Generators: Constructional features of salient and cylindrical types	ICT					
27		excitation systems – static and brushless, working, Armature windings	ICT					
28		winding factors, EMF equation;	ICT					
29		Harmonics–causes, reduction and elimination	Chalk and Talk					
30		Armature reaction, Synchronous reactance, Equivalent circuit	ICT					
31		Synchronous Generators Analysis: Open circuit and short circuit characteristics, short circuit ratio, Alternator on load	Chalk and Talk					
32		Voltage regulation, Voltage regulation by EMF,	Chalk and Talk					
33		MMF, and ZPF methods	Chalk and Talk					
34		Excitation control for constant terminal voltage when operating on its own load and on infinite bus. Numerical Problems	Chalk and Talk					

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MODULE-5								
35		Synchronous Generators (Salient Pole): Effects of saliency, two-reaction theory.	ICT					
36		Direct and quadrature axis reactance's	ICT					
37		Slip test, numerical problems	Chalk and Talk					
38		Electromagnetic power developed in the salient generators.	Chalk and Talk					
39		Power angle characteristic (salient and non-salient pole), power angle diagram	ICT					
40		reluctance power, capability curve for large turbo generators	Chalk and Talk					
41		Parallel operation of generators and load sharing; Methods of synchronization, Synchronizing power,	Chalk and Talk					
42		Hunting and damper windings. Numerical Problems.	Chalk and Talk					

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Sl. No.	Activity	Planned	Actual	Remarks
1	Theory Classes	42		
2	Assignments/Quizzes/Self-study	3		
3	Tutorials/ Extra classes	-		
4	Internal Assessments	3		
5	ICT-based Teaching. (% of usage in Curriculum)	50%		
Planning			Execution	
Faculty Signature:			Faculty Signature:	
HoD Signature:			HoD Signature:	