

LESSON PLAN

(Academic Session: Aug- Dec 2026)

Program Name	Electrical Engineering
Course Title	ELECTRICAL MOTORS AND TRANSFORMERS
Course Code	EEPC213
Semester	3 rd
Course Teacher Name	Er. Pankaj Sundle

Evaluation Scheme

Sr. No.	Subject Code	Subject	Study Scheme			Total Study Hours	Credits	Evaluation Scheme										Total Marks
			Th	Pr	DCS			Internal Assessment			External Assessment							
1	EEPC213	EM & T	3	-	2	5	3	Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	100		
								40	-	40	60	3	-	-	60			

References Books/ Study Material:

1. G.C. Garg & P.S. Bimbhra, Electrical Machines, Vol-I, II, Khanna Book Publishing House (ISBN:978-9386173-447, 978-93-86173-607), New Delhi
2. Mittle, V.N. and Mittle, Arvind., Basic Electrical Engineering, McGraw Hill Education, New Delhi, ISBN: 9780070593572
3. Kothari, D. P. and Nagrath, I. J., Electrical Machines, McGraw Hill Education. New Delhi, ISBN: 9780070699670
4. Bhattacharya, S. K., Electrical Machines, McGraw Hill Education, New Delhi, ISBN: 9789332902855
5. Mehta, V. K. and Mehta, Rohit, Principles of Electrical Machines, S. Chand and Co. Ltd., New Delhi, ISBN: 9788121930888

Teaching Plan

Unit No	No. of Lect. Planed	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1	1.	DC Generators DC generator: construction, parts, materials and their functions.	3/8/2026		
	2.	-DO-	4/8/2026		
	3.	-DO-	5/8/2026		
	4.	Principle of operation of DC generator: Fleming's right hand rule, schematic diagrams,	6/8/2026		
	5.	-DO-	7/8/2026		
	6.	-DO-	10/8/2026		
	7.	e.m.f. equation of generator, armature reaction, commutation	11/8/2026		
	8.	-DO-	12/8/2026		
	9.	-DO-	13/8/2026		
	10.	-DO-	14/8/2026		
	11.	Applications of DC generators	17/8/2026		

	12.	-DO-	18/8/2026		
	13.	-DO-	19/8/2026		
	14.	-DO-	20/8/2026		
2	15.	D.C. Motors DC motor: Types of DC motors. Fleming's left hand rule, Principle of operation	21/8/2026		
	16.	-DO-	24/8/2026		
	17.	-DO-	25/8/2026		
	18.	Back e.m.f. and its significance, Voltage equation of DC motor. Torque and Speed	26/8/2026		
	19.	-DO-	27/8/2026		
	20.	-DO-	28/8/2026		
	21.	-DO-	31/8/2026		
	22.	Armature torque, Shaft torque, BHP, Brake test, losses, efficiency.	1/9/2026		
	23.	-DO-	2/9/2026		
	24.	-DO-	3/9/2026		
	25.	-DO-	7/9/2026		
	26.	DC motor starters: Necessity, two point and three point starters.	8/9/2026		
	27.	-DO-	9/9/2026		
	28.	-DO-	10/9/2026		
	29.	-DO-	11/9/2026		
	30.	Speed control of DC shunt and series motor: Flux and Armature control. Brushless DC Motor: Construction and working.	14/9/2026		
	31.	-DO-	15/9/2026		
	32.	-DO-	16/9/2026		
	33.	-DO-	17/9/2026		
3	34.	Single Phase Transformers Types of transformers: Shell type and core type; Construction: Parts and functions, materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores	18/9/2026		
	35.	-DO-	21/9/2026		
	36.	-DO-	22/9/2026		
	37.	-DO-	23/9/2026		
	38.	Transformer: Principle of operation, EMF equation of transformer: Derivation, Voltage transformation ratio, Significance of transformer ratings.	24/9/2026		
	39.	-DO-	25/9/2026		
	40.	-DO-	28/9/2026		
	41.	-DO-	29/9/2026		

4	42.	-DO-	30/9/2026		
	43.	Transformer No-load and on-load phasor diagram, Leakage reactance, Equivalent circuit of transformer: Equivalent resistance and reactance.	1/10/2026		
	44.	-DO-	5/10/2026		
	45.	-DO-	6/10/2026		
	46.	-DO-	7/10/2026		
	47.	Voltage regulation and Efficiency: Direct loading, OC/SC method, All-day efficiency.	8/10/2026		
	48.	-DO-	9/10/2026		
	49.	-DO-	12/10/2026		
	50.	-DO-	13/10/2026		
	51.	Three Phase Transformers Bank of three single phase transformers, Single unit of three phase transformer.	14/10/2026		
	52.	Distribution and Power transformers, Construction, cooling, Three phase transformers connections as per IS:2026 (part IV)-1977, Three phase to two phase conversion (Scott Connection), Selection of transformer as per IS: 10028 (Part I)-1985,	15/10/2026		
	53.	-DO-	16/10/2026		
	54.	-DO-	19/10/2026		
	55.	Criteria for selection of distribution transformer, and power transformer, Amorphous Core type Distribution Transformer, Specifications of three-phase distribution transformers as per IS:1180 (part I)1989	21/10/2026		
	56.	-DO-	22/10/2026		
	57.	-DO-	23/10/2026		
	58.	-DO-	27/10/2026		
	59.	Need of parallel operation of three phase transformer, Conditions for parallel operation	28/10/2026		
	60.	-DO-	29/10/2026		
	61.	-DO-	30/10/2026		

5	62.	Polarity tests on mutually inductive coils and single phase transformers; Polarity test, Phasing out test on Three-phase transformer.	16/11/2026		
	63.	-DO-	17/11/2026		
	64.	-DO-	18/11/2026		
	65.	Special Purpose Transformers Single phase and three phase auto transformers: Construction, working and applications	19/11/2026		
	66.	-DO-	20/11/2026		
	67.	-DO-	23/11/2026		
	68.	Instrument Transformers: Construction, working and applications of Current transformer and Potential transformer. Isolation transformer: Constructional Features and applications.	25/11/2026		
	69.	Single phase welding transformer: constructional features and applications. Pulse transformer: constructional features and applications.	26/11/2026		
	70.	'K' factor of transformers: overheating due to non-linear loads and harmonics.	27/11/2026		

Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1,2&3			
2	Unit-4			

Class /House Test

Name of Test	Syllabus Covered in Tests (Unit/Chapter Wise)	Proposed date	Actual Date	Remarks
Class Test-I	Unit-1&2	As per HPTSB Academic Calendar Schedule		
Class Test-II	Unit-3& 4			
House Test	80% of whole syllabus			

Pankaj Sandle
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Recommended for approval please.

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