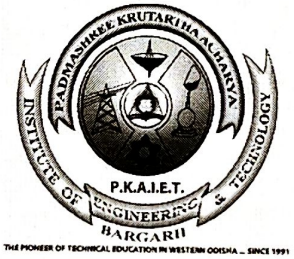
PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN

Session-2022-2023

Discipline: Electrical Engineering. Engg. Semester: 4th.

Name of the Teaching Faculty: Bana Bihari Biswal.

Sub :- Energy Conversion - I.

Subject: EC-I. No. of Days/per week class allotted 5

Semester From Date : 14-02-23 To Date : 23-05-23. No. of Weeks : 15.

Week	Class Day	Theory /Practical Topics
1.	1	Operating principle of DC generator.
	2	Constructional features of DC generator
	3	Armature winding.
	4	Types of DC Machines, shunt, series, compound
	5	Tutorial.
2.	6	Numericals on schematic diagrams.
	7	EMF equation derivation.
	8	Numericals on emf equation
	9	Losses & efficiency of DC generator.
	10	Tutorial.
3	11	condition for maximum efficiency, Problems
	12	Numerical Problems on Power stages

Signature of the Faculty

Subject: EC-I. No. of Days/per week class allotted 5.

Semester From Date : 14-02-23 To Date : 23-05-23 No. of Weeks : 15.

Week	Class Day	Theory /Practical Topics
	13	Armature reaction in DC machines
	14	Commutation in a DC machine, explanation
	15	Tutorial.
4	16	Methods of improving commutation
	17	Characteristics of DC generator & applications
	18	voltage build up of DC generators
	19	Critical resistance & critical speed.
	20	Tutorial.
5	21	Parallel operation of DC generators.
	22	working principle of DC motor back emf & its significance.
	23	voltage equation, condition for maximum power.
	24	Derivation of torque equation.

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Semester From Date : 14-02-23 To Date : 23-05-23. No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	25	Tutorial.
6.	26	Numericals on torque & voltage equation
	27	starting methods of DC motor, 3 pint starter.
	28	4 point starter, 2 point starter
	29	speed control of DC shunt motor.
	30	Tutorial.
7	31	speed control of DC series motor.
	32	Determination of efficiency by brake test.
	33	Determination of efficiency by Swinburne's test.
	34	Numerical on testing of DC motors.
	35	Tutorial.
8.	36.	Losses, efficiency & Power stages of DC motor.

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Semester From Date : 14-02-23 To Date : 23-05-23. No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	37	characteristics & uses of DC motors.
	38.	working principle of transformer.
	39	constructional features, shell type, core type.
	40	Tutorial.
9	41	constructional features. conservator, breather explosion vent etc.
	42	Types of cooling, care & maintenance.
	43	EMF equation of transformer
	44	voltage transformation ratio, ideal transformer.
	45	Tutorial.
10	46	Transformer at no-load, Phasor diagram
	47	Transformer on load, phasor diagram.
	48.	Equivalent resistance, leakage reactance & impedance.

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Semester From Date : 14-02-23 To Date : 23-05-23 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	49	Phasor diagram of loaded practical transformer.
	50	Tutorial.
11	51	Development of approximate equivalent circuit.
	52	Numerical on equivalent circuit.
	53	Approximate & Exact voltage drop.
	54	Regulation of transformer, Problems.
	55	Tutorial.
12	56	Losses in a transformer, open circuit test.
	57	short circuit test on transformer.
	58	Efficiency at different loads & power factors.
	59	condition for maximum efficiency, problems
	60	Tutorial.

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Semester From Date : 14-02-23 To Date : 23-05-23 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
13	61	Determination of load corresponding to maximum efficiency
	62	All day efficiency of transformer.
	63	Parallel operation of 1ϕ transformers.
	64	constructional features of auto transformer
	65	Tutorial.
14.	66.	Working principle of auto transformer.
	67	comparison of auto & two winding transformer.
	68	Applications of auto transformer.
	69	Tap changers with transformers
	70	Tutorial.
15	71	Explanation of CT & PT.
	72.	Ratio error, Phase angle error, burden

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Semester From Date : 14-02-23 To Date : 23-05-23 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	73	Numericals on auto-transformer.
	74	Uses of CT & PT.
	75	Tutorial.

Signature of the Faculty