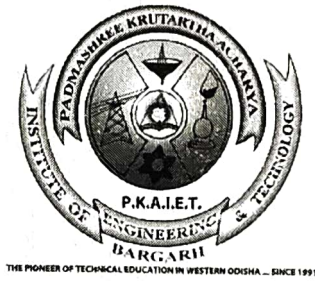
PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN

Session-2024-2025

Semester: 4th Discipline: Electrical Engg.

Subject: Energy Conversion - I

Name of the Teaching Faculty: Bana Bihari Biswal

Subject: E-C-I. No. of Days/per week class allotted : 4

Semester From Date : 04-02-2025 To Date: 17-05-2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
1	1	1. D.C. Generator :- Operating principle of DC generator.
	2.	Constructional features of DC generator.
	3	Armature winding.
	4	Types of DC machines :- shunt, series, compound.
2.	5	Numericals on schematic diagrams.
	6	EMF equation derivation.
	7	Numericals on emf equation.
	8	Losses & efficiency of DC generator.
3	9	condition for maximum efficiency, Problems
	10	Numericals on power stages.
	11	Armature reaction on DC Machines.
	12.	Commutation in a DC Machine, explanation.

Signature of the Faculty

Subject: EC-I No. of Days/per week class allotted : 4

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
4	13	Methods of improving commutation.
	14	Characteristics of DC generators & applications.
	15	Voltage build up of DC generators.
	16	Critical resistance & critical speed.
5	17	Parallel operation of DC generators.
	18	2. D.C. Motor Working principle of DC motor, back emf and its significance.
	19	voltage equation, condition for maximum power.
	20	Derivation of torque equation.
6	21	Numericals on torque & voltage equation
	22	starting methods of DC motor, 3-point starter.
	23	4 point starter, 2 point starter
	24	speed control of DC motor: - shunt motor

Signature of the Faculty

Subject: EC-I No. of Days/per week class allotted : 4

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
7	25	Speed control of DC series motor.
	26	Determination of efficiency by brake test.
	27	Determination of efficiency by Swinburne's test.
	28	Numericals on testing of DC motors.
8	29	Losses, efficiency & power stages of DC motor.
	30	characteristics & uses of DC motors.
	31	3. Single Phase Transformer :- working principle of transformer.
	32	constructional features, shell & core types
9	33	construction features :- conservator, breather, explosion vent etc.
	34	Types of cooling, care & maintenance.
	35	EMF equation of transformer.
	36	voltage transformation ratio, ideal transformer.

Signature of the Faculty

Subject: EC-I No. of Days/per week class allotted : 6

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
10	37	Transformer at no-load, Phasor diagram.
	38	Transformer on load, phasor diagram.
	39	Equivalent resistance, leakage reactance & impedance
	40	Phasor diagram of loaded practical transformer.
11	41	Development of approximate equivalent circuit
	42	Numerical on equivalent circuit.
	43	Approximate & Exact voltage drop
	44	Regulation of transformer, Problems.
12	45	Losses in a transformer, open circuit test.
	46	short circuit test on transformer.
	47	Efficiency at different load & power factor.
	48.	condition for maximum efficiency, problems.

Signature of the Faculty

Subject: EC-I No. of Days/per week class allotted : 4

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
13	49	Determination of load corresponding to maximum efficiency.
	50	All day efficiency of transformer.
	51	Parallel operation of 1-ϕ transformer.
	52	constructional features of auto-transformer
14	53	working principle of auto-transformer.
	54	comparison of auto & two winding transformers.
	55	Application of auto transformer.
	56	tap changer with transformer.
15	57	Explanation of CT & PT.
	58	Ratio error, Phase angle error, Burden.
	59	Numericals on auto-transformer.
	60	Uses of CT & PT.

Signature of the Faculty