

PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN Session-2023-2024

Discipline: Electrical Engg. Semester: 4th.

Subject: Energy Conversion - I

Name of the Teaching Faculty: Bana Bihari Biswal

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

Semester From Date : 16-01-2024 To Date : 26-04-2024

No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
1.	1.	Operating Principle of DC Generators.
	2.	constructional features of DC Generator
	3.	Armature winding.
	4.	Types & classification 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 Generators.
	10.	Tutorials.
3.	11.	condition for maximum efficiency, problems
	12.	Numerical Problems on Power stages



Signature of the Faculty

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

Semester From Date : 16-01-2024 To Date : 26-04-2024 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.

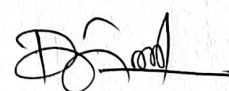

Signature of the Faculty

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

Semester From Date : 16-01-2024 To Date : 26-04-2024

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, Three point starter.
	28.	Four point starter, Two 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 Swinburn's test.
	34.	Numericals on Testing of DC Motors
	35.	Tutorial
8.	36.	Losses, efficiency & power stages of DC Motor.



Signature of the Faculty

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

Semester From Date : 16-01-2024 To Date : 26-04-2024

No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	37.	characteristics & uses of DC Motors
	38.	working principle of transformers
	39.	constructional features, core type shell 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.



Signature of the Faculty

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

Semester From Date : 16-01-2024 To Date : 26-04-2024

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 diagram circuit
	52.	Numerical on equivalent circuit.
	53.	Approximate & Exact Voltage Drop.
	54.	Regulation of transformer, Problem.
	55.	Tutorial.
12.	56.	Losses in a transformer, open circuit test.
	57.	Short circuit test on transformer.
	58.	Efficiency at different loads & power factor
	59.	condition for maximum efficiency. Problems.
	60.	Tutorial.

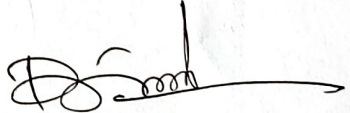
Signature of the Faculty

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

Semester From Date : 16-01-2024 To Date : 26-04-2024

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 single phase transformers.
	64.	Constructional features of auto-transformer.
	65.	Tutorial.
14.	66.	Working principle of auto-transformer.
	67.	Comparison of auto & two windings 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.


Signature of the Faculty

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

Semester From Date : 16-01-2024 To Date : 26-04-2024

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