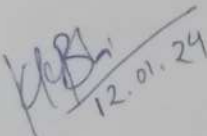


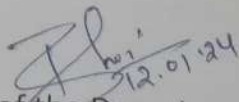
ACADEMIC SESSION : 2023-24

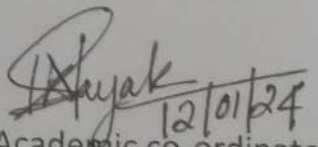
Discipline: Electrical Engineering	Semester: 4th	Name of the Teaching Faculty: KIRAN KUMAR BHOI
Subject: ENERGY CONVERSION- I	No. of days / week class allotted	Semester From date: 16/01/2024 to 26/04/2024
Week	Class Day	Theory/ Practical Topics
1 ST	1 st	Operating principle of generator, Constructional features of DC machine.
	2 nd	Yoke, Pole & field winding, Armature, Commutator
	3 rd	Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch
	4 th	Simple Lap and wave winding, Dummy coils.
2 ND	1 st	Different types of D.C. machines (Shunt, Series and Compound)
	2 nd	Derivation of EMF equation of DC generators. (Solve problems)
	3 rd	Losses and efficiency of DC generator. Condition for maximum efficiency.
	4 th	numerical problems.
3 RD	1 st	Armature reaction in D.C. machine
	2 nd	Commutation and methods of improving commutation.
	3 rd	Role of inter poles and compensating winding in commutation
	4 th	Characteristics of D.C. Generators
4 TH	1 st	Application of different types of D.C. Generators
	2 nd	Concept of critical resistance and critical speed of DC shunt generator
	3 rd	Conditions of Build-up of emf of DC generator.
	4 th	Parallel operation of D.C. Generators.
5 TH	1 st	Uses of D.C generators.
	2 nd	Basic working principle of DC motor
	3 rd	Significance of back emf in D.C. Motor.
	4 th	Voltage equation of D.C. Motor and condition for maximum power output
6 TH	1 st	solve problems
	2 nd	Derive torque equation (solve problems)
	3 rd	Characteristics of shunt, series and compound motors and their application.

	4 th	Starting method of shunt, series and compound motors
7 TH	1 st	Speed control of D.C shunt motors by Flux control method. Armature voltage Control method.
	2 nd	Solve problems
	3 rd	Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
	4 th	Determination of efficiency of D.C. Machine by Brake test method (solve numerical problems)
8 TH	1 st	Determination of efficiency of D.C. Machine by Swinburne's Test method (solve numerical problems)
	2 nd	Losses, efficiency and power stages of D.C. motor.
	3 rd	(Solve numerical problems)
	4 th	Uses of D.C. motors
9 TH	1 st	Working principle of transformer.
	2 nd	Constructional feature of Transformer, Arrangement of core & winding in different types of transformers.
	3 rd	Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc
	4 th	Explain types of cooling methods
10 TH	1 st	State the procedures for Care and maintenance.
	2 nd	EMF equation of transformer
	3 rd	
	4 th	Ideal transformer voltage transformation ratio Operation of Transformer at no load, on load with phasor diagrams
11 TH	1 st	Equivalent Resistance, Leakage Reactance and Impedance of transformer
	2 nd	To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using pf, leading pf and lagging pf load.
	3 rd	To explain Equivalent circuit and solve numerical problems
	4 th	Approximate & exact voltage drop calculation of a Transformer.
12 th	1 st	Regulation of transformer.
	2 nd	Different types of losses in a Transformer. Explain Open circuit and Short Circuit test. Solve numerical problems)
	3 rd	Solve numerical problems)

	4 th	Explain Efficiency, efficiency at different loads and power factors
13 th	1 st	condition for maximum efficiency (solve problems)
	2 nd	Explain All Day Efficiency (solve problems)
	3 rd	Determination of load corresponding to Maximum efficiency.
	4 th	6 Parallel operation of single-phase transformer.
14 th	1 st	Constructional features of Auto transformer
	2 nd	Working principle of single-phase Auto Transformer
	3 rd	Comparison of Auto transformer with a two-winding transformer (saving of copper)
	4 th	Uses of Auto transformer
15 th	1 st	Explain Tap changer with transformer (on load and off load condition)
	2 nd	Explain Current Transformer and Potential Transformer
	3 rd	Define Ratio error, Phase angle error, Burden.
	4 th	1.3 Uses of C.T. and P.T.


 12.01.24
 Prepared by
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 Head of the Department
 (Electrical Engg)
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 Academic co-ordinator
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