Discipline -Electrical	Semester- 4 th	Semester :10/03/2022- 10/06/2022
SUBJECT ENERGY CONVERSION – I	Theory periods: 4P / week Tutorial: 1 P / week	Name of the Teaching Faculty-Mrs. Damayanti Bhatt
WEEK	DAY	TOPICS
1st	1st	1.D.C GENERATOR 1.1. Operating principle of generator
	2nd	Constructional features of DC machine. 1.2.1. Yoke, Pole & field winding, Armature, Commutator.
	3 rd	1.2.2. Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch
	4th	1.2.3. Simple Lap and wave winding, Dummy coils
2nd	5th 1st	Revision and doubt clearing 1.3. Different types of D.C. machines (Shunt, Series and Compound)
	2nd	1.3. Different types of D.C. machines (Shunt, Series and Compound)
	3 rd	1.4. Derivation of EMFequation of DC generators.(Solve problems)
	4th	1.4. Derivation of EMFequation of DC generators.(Solve problems)
	5th	1.5. Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems.
3rd	1st	1.5. Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems.
	2nd	1.6. Armature reaction in D.C. machine
	3 rd	1.6. Armature reaction in D.C. machine

	4th	1.7. Commutation and
	401	methods of improving
		commutation.
	5th	1.7.1. Role of inter poles and
		compensating winding in
		commutation
4th	1st	1.8. Characteristics of D.C.
		Generators
	2nd	1.8. Characteristics of D.C.
		Generators
	3 rd	1.8. Characteristics of D.C.
		Generators
	4th	1.9. Application of different
		types of D.C. Generators.
	5th	1.10. Concept of critical
		resistance and critical speed
		of DC shunt genera
5th	1st	1.11. Conditions of Build-up of
501	130	emf of DC generator.
	and	
	2nd	1.12. Parallel operation of
	ord	D.C. Generators.
	3 rd	1.13. Uses of D.C generators
	4th	D. C. MOTORS
		2.1. Basic working principle of
		DC moto
	5th	2.2. Significance of back emf
		in D.C. Motor
6th	1st	2.3. Voltage equation of D.C.
		Motor and condition for
		maximum power
		output(simple problems)
	2nd	2.3. Voltage equation of D.C.
		Motor and condition for
		maximum power
		output(simple problems)
	3 rd	2.4. Derive torque equation
		(solve problems)
	4th	2.4. Derive torgue equation
		(solve problems)
	5th	
		2.5. Characteristics of shunt,
		series and compound motors
		and their application
7th	1st	2.5. Characteristics of shunt,
		series and compound motors
		and their application
	2nd	2.6. Starting method of shunt,
		series and compound motors.

3 rd	2.6. Starting method of shunt, series and compound motors.
4th	2.7. Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problems
5th	2.7. Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problems

8th	1st	2.8. Speed control of D.C.
		series motors by Field Flux
		control method, Tapped field
		method and series-parallel
		method
	2nd	2.8. Speed control of D.C.
		series motors by Field Flux
		control method, Tapped field
		method and series-parallel
		method
	3 rd	2.10. Determination of
		efficiency of D.C. Machine by
		Swinburne's Test
		method(solve numerical
		problems)
	4th	2.11. Losses, efficiency and
		power stages of D.C.
		motor(solve numerical
		problems)
	5th	2.12. Uses of D.C. motors
9th	1st	Revision of DC Motors
	2nd	3. SINGLE PHASE
		TRANSFORM
		3.1 Working principle of
		transformer ER
	3 rd	3.2 Constructional feature of
		Transformer.
		3.2.1 Arrangement of core &
		winding in different types of
		transformer
	4th	3.2.2 Brief ideas about
		transformer accessories such

		as conservator, tank,
		breather, and explosion vent
		etc.
		3.2.3 Explain types of cooling
		methods
	5th	3.3 State the procedures for
	500	Care and maintenance.
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10th	1st	3.4 EMF equation of
		transformer
	2nd	Numericals on EMF equation
	ord	of transformer
	3 rd	3.5 Ideal transformer voltage
		transformation ratio
	4th	3.6 Operation of Transformer
		at no load, on load with
		phasor diagram
	5th	3.6 Operation of Transformer
		at no load, on load with
		phasor diagram
11th	1st	3.7 Equivalent Resistance,
		Leakage Reactance and
		Impedance of transforme
	2nd	3.7 Equivalent Resistance,
		Leakage Reactance and
		Impedance of transforme
	3 rd	3.8 To draw phasor diagram
		of transformer on load, with
		winding Resistance and
		Magnetic leakage with using
		upf, leading pf and lagging pf
		load.
	4th	3.8 To draw phasor diagram
		of transformer on load, with
		winding Resistance and
		Magnetic leakage with using
		upf, leading pf and lagging pf
		load.
	5th	3.9 To explain Equivalent
	Still	circuit and solve numerical
		problems.
12th	1st	3.9 To explain Equivalent
		circuit and solve numerical
		problems.
	and	
	2nd	3.10 Approximate & exact
		voltage drop calculation of a
	2rd	Transformer
	3 rd	3.10 Approximate & exact

		voltage drop calculation of a
		Transformer
	4th	3.11 Regulation of
	401	transformer.
	5th	3.12 Different types of losses
		in a Transformer. Explain
		Open circuit and Short Circuit
		test.(Solve numerical
		problems)
13th	1st	3.13 Explain Efficiency,
		efficiency at different loads
		and power factors, condition
		for maximum efficiency (solve
		problems
	2nd	3.14 Explain All Day Efficiency
		(solve problems)
	3 rd	3.15 Determination of load
		corresponding to Maximum
		efficiency
	4th	3.16 Parallel operation of
	+01	single phase transformer
		4. AUTO TRANSFORMER
	501	4.1. Constructional features
		of Auto transformer
14th	1st	4.2. Working principle of
		single phase Auto
		Transformer.
	2nd	4.3. Comparison of Auto
		transformer with an two
		winding transformer (saving
		of Copper).
	3 rd	4.4. Uses of Auto transformer
	4th	4.5. Explain Tap changer with
		transformer (on load and off
		load condition)
	5th	5. INSTRUMENT
		TRANSFORMERS
		1.1 Explain Current
		Transformer and Potential
		Transformer
15th	1st	1.2 Define Ratio error, Phase
	150	angle error, Burden.
	and	1.3 Uses of C.T. and P.T.
	2nd	
	3 rd	1.3 Uses of C.T. and P.T.
	3 rd 4th 5th	1.3 Uses of C.T. and P.T.RevisionRevision