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.
	3rd	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
	5th	Revision and doubt clearing
2nd	1st	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)
	3rd	1.4. Derivation of EMF equation of DC generators. (Solve problems)
	4th	1.4. Derivation of EMF equation 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
	3rd	1.6. Armature reaction in D.C. machine

	4th	1.7. Commutation and 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
	3rd	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 emf of DC generator.
	2nd	1.12. Parallel operation of D.C. Generators.
	3rd	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)
	3rd	2.4. Derive torque equation (solve problems)
	4th	2.4. Derive torque 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.

	3rd	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
	3rd	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**
	3rd	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 Care and maintenance.
10th	1st	3.4 EMF equation of transformer
	2nd	Numericals on EMF equation of transformer
	3rd	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
	3rd	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 circuit and solve numerical problems.
12th	1st	3.9 To explain Equivalent circuit and solve numerical problems.
	2nd	3.10 Approximate & exact voltage drop calculation of a Transformer
	3rd	3.10 Approximate & exact

		voltage drop calculation of a Transformer
	4th	3.11 Regulation of 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)
	3rd	3.15 Determination of load corresponding to Maximum efficiency
	4th	3.16 Parallel operation of single phase transformer
	5th	**4. AUTO TRANSFORMER** 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).
	3rd	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 angle error, Burden.
	2nd	1.3 Uses of C.T. and P.T.
	3rd	1.3 Uses of C.T. and P.T.
	4th	Revision
	5th	Revision