BHUBANANANDA ORISSA SCHOOL OF ENGINEERING, CUTTACK

ELECTRICAL ENGG.DEPARTMENT

LESSON PLAN

SEMESTER: 4TH (A)

SESSION – SUMMER (2022-23)

SUBJECT: EC-I (ENERGY CONVERSION-I)

NAME OF FACULTY:Mr. SRIKANTA THAKUR

Discipline: **Electrical Engg.**	Semester:**4Th (A)**	Name of the teaching faculty:**Mr. SRIKANTA THAKUR**
Subject-**Energy Conversion-I**	No. of Days/per week class allotted:**05PERIODS /WEEK (MON-1,WED-1,THUR-1,FRI-1,SAT-1 PERIOD)**	Semester: From Date: **14/02/2023** To Date:**23/05/2023** No. of weeks: **15 WEEKS**
Week	**Class Day**	**Theory/Practical Topics**
1st (14/02/2023-18/02/2023)	15/02/2023	**1. D.C GENERATOR** 1.1. Operating principle of generator
	16/02/2023	1.2. Constructional features of DC machine.
	17/02/2023	1.2.1. Yoke, Pole & field winding, Armature, Commutator.
	18/02/2023	**MAHA SHIVRATRI**
2nd (20/02/2023-25/02/2023)	20/02/2023	1.2.2. Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch.
	22/02/2023	1.2.3. Simple Lap and wave winding, Dummy coils.
	23/02/2023	1.3. Different types of D.C. machines (Shunt, Series and Compound)
	24/02/2023	1.4 Derivation of EMF equation of DC generators. (Solve problems).
	25/02/2023	1.5. Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems.
3rd (27/02/202-04/03/2023)	27/02/2023	1.6. Armature reaction in D.C. machine
	01/03/2023	1.7. Commutation and methods of improving commutation.
	02/03/2023	1.7.1. Role of inter poles and compensating winding in commutation.
	03/03/2023	1.8. Characteristics of D.C. Generators

	04/03/2023	1.9. Application of different types of D.C. Generators
4th (06/03/2023-11/03/2023)	06/03/2023	1.10. Concept of critical resistance and critical speed of DC shunt generator.
	08/03/2023	**HOLI**
	09/03/2023	1.11. Conditions of Build-up of emf of DC generator.
	10/03/2023	1.12. Parallel operation of D.C. Generators
	11/03/2023	1.13. Uses of D.C generators.
5TH (13/03/2023-18/03/2023)	13/03/2023	**2. D. C. MOTORS** 2.1. Basic working principle of DC motor
	15/03/2023	2.2. Significance of back emf in D.C. Motor.
	16/03/2023	2.3. Voltage equation of D.C. Motor and condition for maximum power output(simple problems)
	17/03/2023	**CLASS TEST-I**
	18/03/2023	2.4. Derive torque equation (solve problems)
6TH (20/03/2023-25/03/2023)	20/03/2023	2.5. Characteristics of shunt, series and compound motors and their application.
	22/03/2023	2.6. Starting method of shunt, series and compound motors.
	23/03/2023	2.7. Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problems
	24/03/2023	2.8. Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
	25/03/2023	2.9. Determination of efficiency of D.C. Machine by Brake test method(solve numerical problems)
7th (27/03/2023-01/04/2023)	27/03/2023	2.10. Determination of efficiency of D.C. Machine by Swinburne's Test method(solve numerical problems)
	29/03/2023	2.11. Losses, efficiency and power stages of D.C. motor(solve numerical problems)
	30/03/2023	**RAM NAVAMI**

	31/03/2023	2.12. Uses of D.C. motors
	01/04/2023	**UTKAL DIVAS**
8th (03/04/2023-08/04/2023)	03/04/2023	Problem Solving
	05/04/2023	**3. SINGLE PHASE TRANSFORMER** 3.1 Working principle of transformer.
	06/04/2023	3.2 Constructional feature of Transformer.
	07/04/2023	**GOOD FRIDAY**
	08/04/2023	3.2.1 Arrangement of core & winding in different types of transformer.
9th (10/04/2023-15/04/2023)	10/04/2023	3.2.2 Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.
	12/04/2023	3.2.3 Explain types of cooling methods
	13/04/2023	**CLASS TEST-II**
	14/04/2023	**AMBEDKAR JAYANTI**
	15/04/2023	3.3 State the procedures for Care and maintenance.
10th (17/04/2023-22/04/2023)	17/04/2023	3.4 EMF equation of transformer.
	19/04/2023	3.5 Ideal transformer voltage transformation ratio
	20/04/2023	3.6 Operation of Transformer at no load, on load with phasor diagrams.
	21/04/2023	3.7 Equivalent Resistance, Leakage Reactance and Impedance of transformer.
	22/04/2023	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.
11th (24/04/2023-29/04/2023)	24/04/2023	3.9 To explain Equivalent circuit and solve numerical problems.

	26/04/2023	**INTERNAL ASSESSMENT**
	27/04/2023	**INTERNAL ASSESSMENT**
	28/04/2023	3.10 Approximate & exact voltage drop calculation of a Transformer
	29/04/2023	3.11 Regulation of transformer.
12th (01/05/2023-06/05/2023)	01/05/2023	3.12 Different types of losses in a Transformer. Explain Open circuit and Short Circuit test.(Solve numerical problems)
	03/05/2023	3.13 Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	04/05/2023	3.14 Explain All Day Efficiency (solve problems)
	05/05/2023	**BUDDHA JAYANTI**
	06/05/2023	3.15 Determination of load corresponding to Maximum efficiency.
13th (08/05/2023-13/05/2023)	08/05/2023	3.16 Parallel operation of single phase transformer.
	10/05/2023	**CLASS TEST-III**
	11/05/2023	**4. AUTO TRANSFORMER** 4.1. Constructional features of Auto transformer.
	12/05/2023	4.2. Working principle of single phase Auto Transformer.
	13/05/2023	4.3. Comparison of Auto transformer with an two winding transformer (saving of Copper).
14th (15/05/2023-20/05/2023)	15/05/2023	4.4. Uses of Auto transformer.
	17/05/2023	4.5. Explain Tap changer with transformer (on load and off load condition)

	17/05/2023	4.5. Explain Tap changer with transformer (on load and off load condition)
	18/05/2023	**5. INSTRUMENT TRANSFORMERS** 5.1 Explain Current Transformer and Potential Transformer
	19/05/2023	**SABITRI AMABASYA**
	20/05/2023	5.2 Define Ratio error, Phase angle error, Burden.
15th (22/05/2023- 27/05/2023)	22/05/2023	5.3 Uses of C.T. and P.T.
	23/05/2023	Previous year Question paper discussion