LESSON PLAN

4th semester

Orissa School of Mining Engineering
Keonjhar

Department of Electrical Engineering

Lesson Plan (Energy Conversion 1)

VISION OF OUR DEPARTMENT:

To provide excellent knowledge and enrich the problem solving skills of the students in the field of Electrical Engineering with a focus to prepare the students for industry need, recognized as innovative leader, responsible citizen and improve the environment

MISSION OF OUR DEPARTMENT:

1. **Prepare the students with strong fundamental concepts, analytical capability, and problem solving skills. Create an ambience of education through faculty training, self-learning, sound academic practices and research endeavors.**
2. **Provide opportunities to promote organizational and leadership skills in students through various extra- curricular and co-curricular events.**
3. **To make the students as far as possible industry ready to enhance their employability in the industries.**
4. **To improve department industry collaboration and to maintain effective operational environment.**

Program Educational Objectives

The Program Educational Objectives (PEOs) of the Electrical Engineering Department are given below:

1. **PEO1- To engage in Design of Systems, tools and applications in the field of electrical Engineering and allied engineering Industries.**
2. **PE02- To apply the knowledge of electrical engineering to solve problems of social relevance and/or pursue higher education**
3. **PE03- To work effectively as individuals and as team members in multidisciplinary projects by exhibit leadership capability, triggering social and economic commitment and inculcate community services and protect environment**
4. **PEO4- Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.**

Subject : ENERGY CONVERSION-1 (14/02/2023- 23/05/2023)			
Discipline: Electrical Engineering		Name of the Faculty: Suchismita Sahoo	
Course Code:	TH-1	Semester:	4th
Total Periods:	60	Examination:	2023(SUMMER)
Theory Periods:	5P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Class/period with date		Theory Topics
1st	1st	14/02/23 1p	INTRODUCTION Briefing Syllabus discussion
	2nd	15/02/2023 1p	D.C GENERATOR Operating principle of generator.
	3rd	17/02/2023 1p	Constructional features of DC machine. Yoke, Pole & field winding, Armature, Commutator.
2nd	1st	20/02/2023 1p	Armature winding, back pitch, Front pitch, Resultant pitch and commutator-pitch.
	2nd	21/02/2023 1p	Simple Lap and wave winding, Dummy coils.
	3rd	22/02/2023 1p	Different types of D.C. machines (Shunt, Series and Compound)
	4th	24/02/2023 1p	Derivation of EMF equation of DC generators. (Solve problems)
	5th	25/02/2023 1p	Losses and efficiency of DC generator. Condition for maximum efficiency
3rd	1st	27/02/2023 1p	Armature reaction in D.C. machine
	2nd	28/02/2023 1p	Commutation and methods of improving commutation.
	3rd	01/03/2023 1p	Role of inter poles and compensating winding in commutation.
	4th	03/03/2023 1p	Characteristics of D.C. Generators
	5th	04/03/2023 1p	Application of different types of D.C. Generators
4th	1st	06/03/2023 1p	Concept of critical resistance and critical speed of DC shunt generator
	2nd	10/03/2023 1p	Conditions of Build-up of emf of DC generator.
	3rd	11/03/2023 1p	Parallel operation of D.C. Generators. Uses of D.C generators
5th	1st	13/03/2023 1p	Doubt clearing class
	2nd	14/03/2023 1p	D. C. MOTORS Basic working principle of DC motor
	3rd	15/03/2023 1p	Significance of back emf in D.C. Motor.

	4th	17/03/2023	Voltage equation of D.C. Motor and condition for maximum power output(simple problems)
	5th	18/03/2023 1p	Derive torque equation (solve problems)
6th	1st	20/03/2023 1p	Characteristics of shunt, series and compound motors and their application.
	2nd	21/03/2023 1p	Starting method of shunt, series and compound motors.
	3rd	22/03/2023 1p	Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problems
	4th	24/03/2023 1p	1ST CLASS TEST
	5th	25/03/2023 1p	Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
7th	1st	27/03/2023 1p	Determination of efficiency of D.C. Machine by Brake test method(solve numerical problems)
	2nd	28/03/2023 1p	Determination of efficiency of D.C. Machine by Swinburne's Test method(solve numerical problems)
	3rd	29/03/2023 1p	Losses, efficiency and power stages of D.C. motor.
	4th	31/03/2023 1p	solve numerical problems
8th	1st	03/04/2023 1p	Uses of D.C. motors
	2nd	04/04/2023 1p	SINGLE PHASE TRANSFORMER Working principle of transformer.
	3rd	05/04/2023 1p	Constructional feature of Transformer
	4th	08/04/2023 1p	Arrangement of core & winding in different types of transformer.
9th	1st	10/04/2023 1p	Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.
	2nd	11/04/2023 1p	Explain types of cooling methods
	3rd	12/04/2023 1p	State the procedures for Care and maintenance.
	4th	15/04/2023 1p	EMF equation of transformer
10th	1st	17/04/2023 1p	Ideal transformer voltage transformation ratio
	2nd	18/04/2023 1p	Operation of Transformer at no load with phasor diagrams
	3rd	19/05/2023 1p	Transformer on load with phasor diagrams
	4th	21/04/2023 1p	Equivalent Resistance, Leakage Reactance and Impedance of transformer
11th	1st	24/04/2023 1p	To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using lagging pf load

	2nd	25/04/2023 1p	To explain Equivalent circuit and solve numerical problems
	3rd	26/04/2023 1p	Approximate & exact voltage drop calculation of a Transformer Regulation of transformer. Different types of losses in a Transformer.
	4th	28/04/2023 1p	**INTERNAL ASSESSMENT.**
	5th	29/04/2023 1p	Explain Open circuit and Short Circuit test (Solve numerical problems)
12th	1st	01/05/2023 1p	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	2nd	02/05/2023 1p	
	3rd	03/05/2023 1p	
	4th	06/05/2023 1p	Explain All Day Efficiency (solve problems)
13th	1st	08/05/2023 1p	Determination of load corresponding to Maximum efficiency.
	2nd	09/05/2023 1p	Parallel operation of single phase transformer.
	3rd	10/05/2023 1p	AUTO TRANSFORMER Constructional features of Auto transformer.
	4th	12/05/2023 1p	Working principle of single phase Auto Transformer.
	5th	13/05/2023 1p	**2ND CLASS TEST**
14th	1st	15/05/2023 1p	**Uses of Auto transformer.** **Explain Tap changer with transformer (on load and off load condition**
	2nd	16/05/2023 1p	**INSTRUMENT TRANSFORMERS** Explain Current Transformer
	3rd	17/05/2023 1p	Potential Transformer
	4th	20/05/2023 1p	Define Ratio error, Phase angle error, Burden. Uses of C.T. and P.T.
15th	1st	22/05/2023 1p	Doubt clearing class.
	2nd	23/05/2023 1p	**VST**

23/02/23
FACULTY

12/2/23
HOD

PRINCIPAL
12/2/23