Orissa School of Mining Engineering
Keonjhar

Department of Electrical Engineering

Lesson Plan

Subject : **ENERGY CONVERSION 1**			
Discipline: **Electrical Engineering**		Name of the Faculty: **Suchismita sahoo**	
Course Code:	**TH-1**	Semester:	**4th**
Total Periods:	**60**	Examination:	**2024(summer)**
Theory Periods:	4(L)+1(T)	Class Test:	20
Maximum Marks:	**100**	End Semester Examination:	80

Week	Class Day	Theory Topics
1st	1st 16/01/2024	**D.C GENERATOR** Operating principle of generator . Constructional features of DC machine. Yoke, Pole & field winding, Armature, Commutator.
	2nd 17/01/2024	Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch. Simple Lap and wave winding, Dummy coils.
	3rd 18/01/2024	Different types of D.C. machines (Shunt, Series and Compound). Derivation of EMF equation of DC generators. (Solve problems).
	4th 20/01/2024	Losses and efficiency of DC generator. Condition for maximum efficiency.
2nd	1st 22/01/2024	Tutorial class
	2nd 24/01/2024	Numerical problems
	3rd 25/01/2024	Armature reaction in D.C. machine
	4th 27/01/2024	Commutation and methods of improving commutation.
3rd	1st 29/01/2024	Role of inter poles and compensating winding in commutation.
	2nd 30/01/2024	Tutorial class
	3rd 31/01/2024	Characteristics of D.C. Generators .
	4th 01/02/2024	Application of different types of D.C. Generators
	5th 03/02/2024	Concept of critical resistance and critical speed of DC shunt generator
4th	1st 05/02/2024	Conditions of Build-up of emf of DC generator. Parallel operation of D.C. Generators. Uses of D.C generators .
	2nd 06/02/2024	Tutorial class
	3rd 07/02/2024	**D. C. MOTORS** Basic working principle of DC motor.

		Significance of back emf in D.C. Motor.
	4th 08/02/2024	Voltage equation of D.C. Motor and condition for maximum power output(simple problems)
	5th 10/02/2024	Derive torque equation (solve problems)
5th	1st 12/02/2024	Characteristics of shunt, series and compound motors and their application.
	2nd 13/02/2024	Tutorial class
	3rd 15/02/2024	Starting method of shunt, series and compound motors.
	4th 17/02/2024	Speed control of D.C shunt motors by Flux control method.
6th	1st 19/02/2024	Armature voltage Control method. Solve problems
	2nd 20/02/2024	Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
	3rd 21/02/2024	Tutorial class
	4th 22/02/2024	Determination of efficiency of D.C. Machine by Brake test method(solve numerical problems)
	5th 24/02/2024	Determination of efficiency of D.C. Machine by Swinburne's Test method(solve numerical problems
7th	26/02/2024	Losses, efficiency and power stages of D.C. motor
	4 2nd 27/02/2024	solve numerical problems
	3rd 28/02/2024	**First class test.**
	4th 29/02/2024	Uses of D.C. motors
	5th 02/03/2024	**SINGLE PHASE TRANSFORMER** Working principle of transformer.
8th	1st 04/03/2024	Constructional feature of Transformer
	2nd 06/03/2024	Arrangement of core & winding in different types of transformer.
	3rd 07/03/2024	Tutorial class
	4th 09/03/2024	Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.
9th	1st 11/03/2024	Explain types of cooling methods
	2nd 12/03/2024	State the procedures for Care and maintenance.
	3rd 13/03/2024	EMF equation of transformer

	4th 14/03/2024	Tutorial class
	5th 16/03/2024	Ideal transformer voltage transformation ratio
10th	1st 18/03/2024	Operation of Transformer at no load with phasor diagrams
	2nd 19/03/2024	Revision
	3rd 20/03/2024	Transformer on load with phasor diagrams
	4th 21/03/2024	Tutorial class
	5th 23/03/2024	Equivalent Resistance, Leakage Reactance and Impedance of transformer
11th	1st 27/03/2024	To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using lagging pf load
	2nd 28/03/2024	To explain Equivalent circuit and solve numerical problems
	3rd 30/03/2024	Approximate & exact voltage drop calculation of a Transformer Regulation of transformer
12th	1st 02/04/2024	Tutorial class
	2nd 03/04/2024	**Internal assessment.**
	3rd 04/04/2024	Different types of losses in a Transformer
	4th 06/04/2024	Explain Open circuit and Short Circuit test.(Solve numerical problems)
13th	1st 08/04/2024	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	2nd 09/04/2024	Tutorial class
	3rd 10/04/2024	**2nd class test.**
	4th 13/04/2024	Explain All Day Efficiency (solve problems
14th	1st 15/04/2024	Determination of load corresponding to Maximum efficiency.
	2nd 16/04/2024	Parallel operation of single phase transformer.
	3rd 18/04/2024	Tutorial class
	4th 20/04/2024	**AUTO TRANSFORMER** Constructional features of Auto transformer. Working principle of single phase Auto Transformer.
15th	1st 22/04/2024	Comparison of Auto transformer with an two winding transformer (saving of Copper). Uses of Auto transformer. Explain Tap changer with transformer (on load and off load condition)
	2nd 23/04/2024	**INSTRUMENT TRANSFORMERS** Explain Current Transformer . Potential Transformer
	3rd 24/04/2024	Define Ratio error, Phase angle error, Burden Uses of C.T. and P.T.

	4th 25/04/2024	Vst

15/1/24
Lecturer

15/1/24
HOD..(Electrical)
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15-1-24
Principal