BHUBANANANDA ORISSA SCHOOL OF ENGINEERING, CUTTACK.

ELECTRICAL ENGG.DEPARTMENT

LESSON PLAN

SEMESTER: 4TH (B)

SESSION – summer (2021-22)

SUBJECT: ENERGY CONVERSION-I

NAME OF FACULTY: ER. SURYA CHANDAN SAHOO

Discipline: **Electrical Engg.**	Semester: **4TH (B)**	Name of the teaching faculty: **SURYA CHANDAN SAHOO**
Subject-**EC-I**	No. of Days/per week class allotted:**05 PERIODS/WEEK (MON-1,WED-2,SAT-2 PERIOD)**	Semester: From Date: **10/03/2022** To Date: **10/06/2022** No. of weeks: **14 WEEKS**
Week	Class Day	Theory Topics
1st (10/03/2022-12/03/2022)	12/03/2022)	**1. D.C GENERATOR** 1.1. Operating principle of generator
	12/03/2022)	1.2. Constructional features of DC machine.
2nd (14/03/2022-19/03/2022)	14/03/2022	1.2.1. Yoke, Pole & field winding, Armature, Commutator.
	16/03/2022	1.2.2. Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch.
	16/03/2022	1.2.3. Simple Lap and wave winding, Dummy coils.
	19/03/2022	**DOLA PURNIMA**
	19/03/2022	**HOLI**
3rd (21/03/2022-26/03/2022)	21/03/2022	1.3. Different types of D.C. machines (Shunt, Series and Compound)

	23/03/2022	1.4. Derivation of EMF equation of DC generators. Solve problems
	23/03/2022	1.5. Losses and efficiency of DC generator.
	26/03/2022	1.5. Condition for maximum efficiency and numerical problems.
	26/03/2022	1.6. Armature reaction in D.C. machine
4th (28/03/2022-02/04/2022)	28/03/2022	1.7. Commutation and methods of improving commutation.
	30/03/2022	1.7.1. Role of inter poles and compensating winding in commutation.
	30/03/2022	1.8. Characteristics of D.C. Generators
	2/04/2022	1.9. Application of different types of D.C. Generators.
	2/04/2022	1.10. Concept of critical resistance and critical speed of DC shunt generator
5TH (04/04/2022-09/04/2022)	04/04/2022	1.11. Conditions of Build-up of emf of DC generator.
	06/04/2022	1.12. Parallel operation of D.C. Generators. 1.13. Uses of D.C generators.
	06/04/2022	**2. D. C. MOTORS** 2.1. Basic working principle of DC motor

		2.2. Significance of back emf in D.C. Motor.
	09/04/2022	2.3. Voltage equation of D.C. Motor and condition for maximum power output(simple problems)
	09/04/2022	**CLASS TEST-I**
6TH (11/04/2022-16/04/2022)	11/04/2022	2.4. Derive torque equation (solve problems)
	13/04/2022	2.5. Characteristics of shunt and their application.
	13/04/2022	2.5. Characteristics of series and compound motors and their application.
	16/04/2022	2.6. Starting method of shunt, series and compound motors.
	16/04/2022	2.7. Speed control of D.C shunt motors by Flux control method. Armature voltage Control method.
7th (18/04/2022-23/04/2022)	18/04/2022	2.7 .Solve problems
	20/04/2022	2.8. Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
	20/04/2022	2.9. Determination of efficiency of D.C. Machine by Brake test method(solve numerical problems)
	23/04/2022	2.10. Determination of efficiency of D.C. Machine by Swinburne's Test method
	23/04/2022	**2.10. solve numerical problems**

8th (25/04/2022-30/04/2022)	25/04/2022	2.11. Losses, efficiency and power stages of D.C. motor
	27/04/2022	(solve numerical problems) 2.12. Uses of D.C. motors
	27/04/2022	**3. SINGLE PHASE TRANSFORMER** 3.1 Working principle of transformer.
	30/04/2022	3.2 Constructional feature of Transformer. 3.2.1 Arrangement of core & winding in different types of transformer.
	30/04/2022	3.2.2 Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.
9th (02/05/2022-07/05/2022)	02/05/2022	3.2.3 Explain types of cooling methods 3.3 State the procedures for Care and maintenance.
	04/05/2022	3.4 EMF equation of transformer. 3.5 Ideal transformer voltage transformation ratio
	04/05/2022	**CLASS TEST-II**
	07/05/2022	3.6 Operation of Transformer at no load, on load with phasor diagrams.
	07/05/2022	3.7 Equivalent Resistance, Leakage Reactance and Impedance of transformer.
10th (09/05/2022-14/05/2022)	09/05/2022	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.

	11/05/2022	3.9 To explain Equivalent circuit and solve numerical problems. 3.10 Approximate & exact voltage drop calculation of a Transformer.
	11/05/2022	**INTERNAL ASSESSMENT**
	14/05/2022	3.16 Parallel operation of single phase transformer.
	14/05/2022	3.11 Regulation of transformer.
11th (16/05/2022-21/05/2022)	16/05/2022	**BUDHA PURNIMA**
	18/05/2022	3.12 Different types of losses in a Transformer. Explain Open circuit and Short Circuit test.(Solve numerical problems)
	18/05/2022	3.13 Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	21/05/2022	3.14 Explain All Day Efficiency (solve problems)
	21/05/2022	3.15 Determination of load corresponding to Maximum efficiency.
12th (23/05/2022-28/05/2022)	23/05/2022	4. Auto Transformer 4.1. Constructional features of Auto transformer.
	25/05/2022	4.2. Working principle of single phase Auto Transformer.
	25/05/2022	4.3. Comparison of Auto transformer with an two winding transformer (saving of Copper).
	28/05/2022	4.4. Uses of Auto transformer.
	28/05/2022	4.5. Explain Tap changer with transformer (on load and off load condition)

13th (30/05/2022-04/06/2022)	30/05/2022	**SABITRI AMABASYA**
	01/06/2022	5. Instrument Transformers
	01/06/2022	1.1 Explain Current Transformer and Potential Transformer
	04/06/2022	1.2 Define Ratio error, Phase angle error, Burden.
	04/06/2022	1.3 Uses of C.T. and P.T.
14th (06/06/2022-10/06/2022)	06/06/2022	**CLASS TEST 3**
	08/06/2022	Revision
	08/06/2022	Revision

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