



Th.1 : ENERGY CONVERSION-1

Name of the Course: Diploma in Electrical Engineering		Date: 14/02/23 to 23/05/23	
Faculty: Mr Ruhia Hansda			
Course code:	Th.1	Semester:	6 th
Total Period:	75 Periods	Examination:	3 Hrs
Theory periods:	4P / Week	Internal Assessment:	20
Tutorial:	1P	End Semester Examination:	80
Maximum marks:	100		

VISION:

To create competent & industry ready Electrical Diploma Engineers with professional and social values to meet future challenges.

MISSION:

- To prepare diploma holders through “qualitative competency based education system” to compete with national requirement along with core values.
- To produce dynamic Electrical Engineers to serve the society and industry.
- To develop leadership qualities, communication skills, critical thinking and attitude for lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES:

PEO1	Apply technical knowledge and skills learned in the field of Electrical Engineering to excel in Professional and/or higher education.
PEO2	To provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
PEO3	To engage in lifelong learning, career enhancement to adopt emerging technologies

Course outcomes:-

Co1	Explain the working principle and characteristics of dc machines.
Co2	Calculate losses and efficiency of dc machines.
Co3	Study the working principle single phase transformer and solve numerical problems based on it.
Co4	Know the application of dc machines and transformer in practical field.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	Periods
1.	DC GENRATORS	17
2.	D. C. MOTORS	15
3.	SINGLE PHASE TRANSFORMER	20
4.	AUTO TRANSFORMER	3
5.	INSTRUMENT TRANSFORMERS	5
	Total	60



GOVERNMENT POLYTECHNIC KORAPUT DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN


Week	Day	Theory topic
1 st	1 st	DC GENERATORS 17 -Introduction, machines types, operation principle of generator
	2 nd	Constructional features of dc generators yoke, pole & field winding, armature, commutator
	3 rd	Armature winding, back pitch, front pitch, resultant pitch, commutator pitch
	4 th	Simple lap and wave winding, dummy coils, types of dc generators (shunt, series compound)
		TUTORIAL
2 nd	1 st	Shunt series compound dc m/c, derivation of EMf equation of dc generators
	2 nd	Solve problems
	3 rd	Losses and efficiency of dc generator, condition for maximum efficiency and numerical problem
	4 th	numerical problem
		TUTORIAL
3 rd	1 st	numerical problem
	2 nd	Armature reaction in dc machines
	3 rd	Comutation and methods of improving comutation.
	4 th	Role of inter poles and compensating winding in comutations.
		TUTORIAL
4 th	1 st	Character of dc generators. Application of different types of dc generators
	2 nd	Concept of critical resistance and critical of speed of dc shunt generator
	3 rd	Condition of build up of emf of dc generator.
	4 th	Parallel operation of dc generator.
		TUTORIAL
5 th	1 st	Uses of dc generators
	2 nd	2.D. C. MOTORS-15 Basic working principle of DC motor
	3 rd	Significance of back emf in D.C. Motor.
	4 th	Voltage equation of D.C. Motor and condition for maximum power output (simple problems)
		TUTORIAL
6 th	1 st	Derive torque equation (solve problems)
	2 nd	Characteristics of shunt, series and compound motors and their application
	3 rd	Starting method of shunt, series and compound motors
	4 th	Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problems
		TUTORIAL
7 th	1 st	Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problems
	2 nd	Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
	3 rd	Determination of efficiency of D.C. Machine by Brake test method (solve numerical problems)
	4 th	Determination of efficiency of D.C. Machine by Swinburne's Test method (solve numerical problems)
		TUTORIAL
8 th	1 st	Determination of efficiency of D.C. Machine by Swinburne's Test method (solve numerical problems)
	2 nd	Losses, efficiency and power stages of D.C. motor (solve numerical problems)
	3 rd	Losses, efficiency and power stages of D.C. motor (solve numerical problems)
	4 th	Uses of D.C. motors
		TUTORIAL

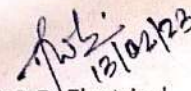


GOVERNMENT POLYTECHNIC KORAPUT

DEPARTMENT OF ELECTRICAL ENGINEERING

9 th	1 st	3. SINGLE PHASE TRANSFORMER-20 -Introduction, Defination Working principle of transformer
	2 nd	Constructional feature of Transformer
	3 rd	Arrangement of core & winding in different types of transformer. Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.
	4 th	Explain types of cooling methods, State the procedures for Care and maintenance
		TUTORIAL
10 th	1 st	EMF equation of transformer
	2 nd	Ideal transformer voltage transformation ratio
	3 rd	Operation of Transformer at no load, on load with phasor diagrams
	4 th	Equivalent Resistance, Leakage Reactance and Impedance of transformer.
		TUTORIAL
11 th	1 st	To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using upf, leading pf and lagging pf load.
	2 nd	To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using upf, leading pf and lagging pf load.
	3 rd	To explain Equivalent circuit and solve numerical problems.
	4 th	Approximate & exact voltage drop calculation of a Transformer.
		TUTORIAL
12 th	1 st	Regulation of transformer. Different types of losses in a Transformer. Explain Open circuit and Short Circuit test. (Solve numerical problems)
	2 nd	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	3 rd	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	4 th	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
		TUTORIAL
13 th	1 st	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	2 nd	Explain All Day Efficiency (solve problems)
	3 rd	Determination of load corresponding to Maximum efficiency.
	4 th	Parallel operation of single phase transformer
		TUTORIAL
14 th	1 st	4. AUTO TRANSFORMER-3 - Constructional features of Auto transformer
	2 nd	Working principle of single phase Auto Transformer
	3 rd	Comparison of Auto transformer with an two winding transformer (saving of Copper). Uses of Auto transformer. 4.5. Explain Tap changer with transformer (on load and off load condition
	4 th	5. INSTRUMENT TRANSFORMERS-5 -Explain Current Transformer
		TUTORIAL
15 th	1 st	Explain Potential Transformer
	2 nd	1.2 Define Ratio error, Phase angle error, Burden.
	3 rd	1.2 Define Ratio error, Phase angle error, Burden.
	4 th	1.3 Uses of C.T. and P.T.
		TUTORIAL


Signature of faculty concerned


H.O.D. Electrical