

Discipline: Electrical	Semester: 4th	Name of the Teaching Faculty: En. Kishore Ku. Sasmal	
Subject: Energy Conversion-I	No of Days/Week Class Allotted: 4	Semester From date: 10.3.2022 To date: 18.06.2022	No. of Weeks

WEEK	Class Day	Theory Topics
1 st	1st	DC GENERATORS - Operating principle of DC generator.
	2nd	Constructional features of DC machine.
	3rd	Yoke, pole & field winding, Armature, Commutator.
	4th	Armature winding, back pitch, front pitch, Resultant pitch & Commutator pitch.
	5th	
2 nd	1st	Simple lap & wave winding, Dummy coils.
	2nd	Different types of D.C. machines, (Shunt, Series & Compound)
	3rd	Derivation of EMF equation of DC generators (solving problems)
	4th	Losses & efficiency of DC generator. Condition for maximum efficiency.
	5th	Numerical problems on losses and
3 rd	1st	Numerical problems on losses and efficiency of DC generator.
	2nd	Armature reaction in D.C. machine.
	3rd	Commutation and methods of improving commutation.
	4th	Role of interpoles and compensating winding in commutation.

WEEK	Class Day	Theory Topics
4 th	1st	Characteristics of D.C. generators
	2nd	Application of different types of D.C. Generators
	3rd	Concept of critical resistance and Critical Speed of D.C. shunt generator.
	4th	Conditions of Build-up of emf of DC generator.
	5th	
5 th	1st	Parallel operation of D.C Generators
	2nd	uses of DC generators.
	3rd	D.C. MOTORS - Basic working principle of DC motor.
	4th	Significance of back emf in DC motor.
	5th	
6 th	1st	Voltage Equation of DC motor and condition for maximum power output. (Simple Problems)
	2nd	Derive torque equation (Solving Problems)
	3rd	Characteristics of Shunt Series & Compound motors.
	4th	Application of shunt series and compound motors.
	5th	

Discipline: Electrical	Semester: 4th	Name of the Teaching Faculty Ka Kishore Ku Sasmal	
Subject: Energy Conversion - 1	No of Days/Week Class Allotted: 4	Semester From date: 10.3.2022 to date 18.06.2022	No. of Weeks:

WEEK	Class Day	Theory Topics
7 th	1st	Starting method of shunt series and compound motors
	2nd	Speed Control of D.C. shunt motors by Flux control method, Armature voltage control method (Solving problems)
	3rd	Speed control of D.C. series motors by field Flux control method, tapped field method & series-parallel method.
	4th	Determination of efficiency of D.C. machine by Brake test method (Solving of numerical problems)
	5th	
8 th	1st	Determination of efficiency of D.C. machine by Swinburne's Test method (Solving of numerical problems)
	2nd	Losses, efficiency and power stages of D.C. motor (Solving of numerical problems)
	3rd	Uses of DC motors
	4th	SINGLE PHASE TRANSFORMER - Working principle of transformer.
	5th	
9 th	1st	Constructional feature of Transformer.
	2nd	Arrangement of Core & winding in different types of transformer.
	3rd	Brief ideas about transformer accessories such as conservator, tank, breather & explosion vent
	4th	Explaining types of cooling methods.

WEEK	Class Day	Theory Topics
10th	1st	State the Procedures for care & maintenance.
	2nd	EMF equation of transformer
	3rd	Ideal transformer Voltage transformation ratio
	4th	Operation of Transformer at no load with Phasor diagrams.
	5th	
11th	1st	Equivalent Resistance, Leakage Reactance & Impedance of transformer.
	2nd	Drawing of phasor diagram of transformer on load with winding resistance
	3rd	Magnetic leakage with using pf, leading pf & lagging pf load.
	4th	Explanation of Equivalent circuit & solving of numerical problems.
	5th	
12th	1st	Approximate & exact voltage drop calculation of a transformer.
	2nd	Regulation of transformer.
	3rd	Different types of losses in a Transformer Explanation of open circuit test
	4th	Explanation of short circuit test Solving of numerical problems.
	5th	

Subject: Electrical	Semester: 4th	Name of the Teaching Faculty: En. Kishore Kumar Sasmal	
Topic: Energy Conversion - 1	No. of Days/Week Class Allotted: 4	Semester From date: 10.2.2022 To date: 18.6.2022	No. of Weeks:

WEEK	Class Day	Theory Topics
13th	1st	Explaining Efficiency, Efficiency at different loads & Power factor, Condition for maximum efficiency. Solving problems.
	2nd	Explaining All Day Efficiency, Problem solution.
	3rd	Determination of load corresponding to maximum efficiency.
	4th	Parallel operation of single phase transformer
	5th	
14th	1st	AUTO TRANSFORMER - Constructional features of Auto Transformer
	2nd	Working principle of single phase Auto Transformer.
	3rd	Comparison of Auto transformer with an two winding transformer. Saving of copper.
	4th	Uses of Auto Transformer. Explanation of Tap changer with transformer on load & no load condition.
	5th	
15th	1st	INSTRUMENT TRANSFORMERS - Explaining current transformer.
	2nd	Explaining potential transformer.
	3rd	Define Ratio error, phase angle error, Burden.
	4th	Uses of C.T. & P.T.