DEPARTMENT OF ELECTRICAL ENGINEERING
Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION – 2023-24
ELECTRICAL MACHINE

Course Code : Th.1	**Semester : 4th**
Total Periods : 60 Periods	**Examination : 3 Hours**
Theory Periods : 4 P/Week	**Internal Assessment : 20 Marks**
Tutorial : -	**End Semester Examination : 80 Marks**
Maximum Marks : 100	
Semester From Date : 16/01/2024	**To Date : 8/05/2024**
Name of Teaching Faculty: Er. CHANDRA PRAKASH LENKA	

WEEK	PERIOD	TOPIC
1st	1st	**ELECTRICAL MATERIAL** Properties & uses of different conducting material.
	2nd	Properties & use of various insulating materials used electrical engineering.
	3rd	Various magnetic materials & their uses.
	4th	Doubt clearing and Revision class.
2nd	1st	**DC GENERATOR** Construction
	2nd	Principle & application of DC Generator
	3rd	Classify DC generator including voltage equation.
	4th	Classify DC generator including voltage equation.
3rd	1st	Derive EMF equation
	2nd	Simple problems on EMF equation.
	3rd	Parallel operation of DC generators.
	4th	Doubt clearing and Revision class.
4th	1st	**DC MOTOR** Principle of working of a DC motor.
	2nd	Concept of development of torque & back EMF in DC motor including simple problems.
	3rd	Derive equation relating to back EMF, Current.

	4th	Derive equation relating to Speed and Torque equation
5th	1st	Classify DC motors & explain characteristics, application.
	2nd	Three point & four point stator/static of DC motor by solid State converter.
	3rd	Three point & four point stator/static of DC motor by solid State converter.
	4th	Speed of DC motor by field control method.
6th	1st	Speed of DC motor by armature control method.
	2nd	Power stages of DC motor & derive Efficiency of a DC motor.
	3rd	Doubt clearing and Revision class.
	4th	**AC CIRCUITS** Mathematical representation of phasors, significant of operator "J"
7th	1st	Addition, Subtraction of phasor quantities.
	2nd	Multiplication and Division of phasor quantities.
	3rd	AC series circuits containing resistance, capacitances.
	4th	Conception of active, Reactive and apparent power and Q-factor of series circuits.
8th	1st	Solve related problems.
	2nd	Find the relation of AC Parallel circuits containing Resistances, Inductance and Capacitances.
	3rd	Q-factor of parallel circuits.
	4th	Doubt clearing and Revision class.
9th	1st	**TRANSFORMER** Ideal transformer.
	2nd	Construction & working principle of transformer
	3rd	Derive of EMF equation of transformer, voltage transformation ratio.
	4th	Discuss Flux, Current, EMF components of transformer.
10th	1st	Their phasor diagram under no load Condition
	2nd	Phasor representation of transformer flux, current EMF primary and secondary Voltages under loaded condition.
	3rd	Types of losses in Single Phase (1-ø) Transformer.

	4th	Open circuit & short-circuit test (simple problems)
11th	1st	Parallel operation of Transformer.
	2nd	Auto Transformer.
	3rd	Doubt clearing and Revision class.
	4th	**INDUCTION MOTOR** Construction feature.
12th	1st	Types of three-phase induction motor.
	2nd	Principle of development of rotating magnetic field in the stator
	3rd	Establish relationship between synchronous speed, actual speed and slip of induction motor
	4th	Establish relation between torque, rotor current and power factor
13th	1st	Explain starting of an induction motor by using DOL stator.
	2nd	Explain starting of an induction motor by using Star-Delta stator. State industrial use of induction motor.
	3rd	Doubt clearing and Revision class.
	4th	**SINGLE PHASE INDUCTION MOTOR** Construction features
14th	1st	Principle of operation of capacitor type and shaded pole type of single-phase induction motor.
	2nd	Explain construction of AC series motor.
	3rd	Explain operation of AC series motor.
	4th	Concept of alternator.
15th	1st	Application of Alternator.
	2nd	Doubt clearing and Revision class.
	3rd	Previous year Question discussion.
	4th	Previous year Question discussion.