NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: Th-4 (ELECTRIAL MACHINE)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Electrical material	4	4
2	DC generator	10	10
3	DC motor	8	8
4	Ac circuit	8	8
5	Three phase supply	4	4
6	Transformer	8	8
7	Induction motor	10	10
8	Single phase induction motor	5	5
9	Alternator	3	3
10	Tutorial	15	15
	TOTAL	75	75

Discipline: ELECTRICAL AND ELECTRONIC ENGINEERING	**Semester:** 4th	**Name of the Teaching Faculty: Er. RANJAN KUMAR PADHI**
Week	**Class Day**	**Theory / Practical Topics**
1st	**1st**	**ELECTRICAL MATERIAL** Properties & uses of different conducting material
	2nd	Properties & use of various insulating materials used electrical engineering
	3rd	Properties & use of various insulating materials used electrical engineering
	4th	Types of Magnetic materials & their uses
	5th	Class Test
2nd	**1st**	**DC GENERATOR:** Basic working principle
	2nd	constructional feature of DC Generator
	3rd	constructional feature of DC Generator
	4th	Classification of DC generator with voltage equation
	5th	Class Test
3rd	**1st**	Classification of DC generator with voltage equation
	2nd	Derivation of EMF equation & simple problems
	3rd	Derivation of EMF equation & simple problems
	4th	Applications of DC generators
	5th	Class Test
4th	**1st**	Parallel operation of DC generators
	2nd	Parallel operation of DC generators
	3rd	**DC MOTOR** Working Principle of a DC motor
	4th	Concept of development of torque & back EMF in DC motor
	5th	Class Test
	1st	Concept of development of torque & back EMF in DC motor. (simple problems)

5th	2nd	Derive equation relating to back EMF, Current, Speed and Torque equation
	3rd	Classification of DC motors & their characteristics Application of DC MOTORS
	4th	State & explain three point &four point stator of DC motors
	5th	Class Test
6th	1st	Speed control of DC motor by field control and armature voltage control method
	2nd	Explain power stages of DC motor & derive Efficiency of a DC motor.
	3rd	**AC CIRCUITS** State Mathematical representation of phasors, significant of operator "J".
	4th	Addition, Subtraction, Multiplication and Division of phasor quantities
	5th	Class Test
7th	1st	Explain AC series circuits containing resistance, capacitances, Concept of active, reactive and apparent power and Q-factor of series circuits. (Solve related problems)
	2nd	Explain AC series circuits containing resistance, capacitances, Concept of active, reactive and apparent power and Q-factor of series circuits. (Solve related problems)
	3rd	Explain AC series circuits containing resistance, capacitances, Concept of active, reactive and apparent power and Q-factor of series circuits. (Solve related problems)

	4th	Explain AC series circuits containing resistance, capacitances, Concept of active, reactive and apparent power and Q-factor of series circuits. (Solve related problems)
	5th	Class Test
8th	1st	Find the relation of AC Parallel circuits containing Resistances, Inductance and Capacitances Q-factor of parallel circuits
	2nd	Find the relation of AC Parallel circuits containing Resistances, Inductance and Capacitances Q-factor of parallel circuits
	3rd	**THREE PHASE SUPPLY :** Star and Delta circuit
	4th	Star and Delta circuit
	5th	Class Test
9th	1st	Line and Phase relationship
	2nd	Power equation with numerical problems
	3rd	**TRANSFORMER** State construction & working principle of transformer
	4th	Derive of EMF equation of transformer, voltage transformation ratio.
	5th	Class Test
10th	1st	Discuss operation of transformer on no-load with phasor diagram
	2nd	Operation of transformer on load condition in secondary with phasor diagram for different load.
	3rd	Operation of transformer on load condition in secondary with phasor diagram for different load.
	4th	Types of losses in Single Phase (1-ø) Transformer.

	5th	Class Test
11th	1st	Open circuit & short-circuit test (simple problems).
	2nd	Parallel operation of Transformer
	3rd	**INDUCTION MOTOR:** Constructional feature and types of three-phase induction motor**.**
	4th	Principle of development of rotating magnetic field in the stator.
	5th	Class Test
12th	1st	Working principle of three phase induction motor.
	2nd	Working principle of three phase induction motor.
	3rd	Slip speed and slip of induction motor.
	4th	Establish relation between torque, rotor current and power factor
	5th	Class Test
13th	1st	Establish relation between torque, rotor current and power factor
	2nd	Explain starting of an induction motor by using DOL and Star-Delta stator.
	3rd	Explain starting of an induction motor by using DOL and Star-Delta stator.
	4th	Industrial use of induction motor
	5th	Class Test
	1st	**SINGLE PHASE INDUCTION MOTOR**: Explain construction features and principle of operation of capacitor type and shaded pole type of single-phase induction motor.

14th	2nd	Explain construction features and principle of operation of capacitor type and shaded pole type of single-phase induction motor.
	3rd	Explain construction features and principle of operation of capacitor type and shaded pole type of single-phase induction motor.
	4th	Explain construction & operation of AC series motor.
	5th	Class Test
15th	1st	Explain construction & operation of AC series motor.
	2nd	**ALTERNATOR** Concept of alternator & its application.
	3rd	Concept of alternator & its application.
	4th	Concept of alternator & its application.
	5th	Class Test

Sign.Of Faculty **Sign. Of HOD**