KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN
Session (2023-2024)

Discipline: Electronics & Telecommunication	**Semester: 4ᵗʰ, Summer/2024**	**Name of the Faculty:** Abhaya Kumar Behera Senior Lecturer **Email ID:** abhaya_bfel@kp.kiit.ac.in
Subject: Electrical Machine, Theory-1	**No. of Days/week:** 04	**Start Date: 16/01/2024** **End Date: 26/04/2024**

Week	Class Day	Theory Topics
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	**DC Generator-** Construction of DC Generator
2nd	1st	Principle of DC Generator.
	2nd	Classification of DC generator
	3rd	voltage equation of DC generator
	4th	Derive EMF equation & simple problems.
3rd	1st	Parallel operation of DC generators.
	2nd	Numerical Solving
	3dr	**DC Motor-** Principle of working of a DC motor
	4th	Concept of back EMF in DC motor
4th	1st	Concept of torque of DC Motor
	2nd	Numerical solving
	3dr	Derive equation relating to back EMF, Current, Speed and Torque

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

	3rd	short-circuit test of single phase Transformer
	4th	Numerical Solving on open circuit test
11th	1st	Numerical Solving on short circuit test
	2nd	Parallel operation of Transformer, Auto Transformer
	3rd	Quiz-2 Test
	4th	**Induction Motor-** Construction feature, types of three-phase induction motor.
12th	1st	Principle of development of rotating magnetic field in the stator
	2nd	Establish relationship between synchronous speed, actual speed and slip of induction motor
	3rd	Establish relation between torque, rotor current and power factor.
	4th	Explain starting of an induction motor by using DOL starter
13th	1st	Explain starting of an induction motor by using Star-Delta stator
	2nd	State industrial use of induction motor.
	3rd	**Single Phase Induction Motor-** Construction features of capacitor type single-phase induction motor.
	4th	Principle of operation of capacitor type single-phase induction motor.
14th	1st	Construction features of shaded pole type single-phase induction motor.
	2nd	Principle of operation of shaded pole type single-phase induction motor.
	3rd	Explain construction & operation of AC series motor.
	4th	Concept of alternator, application of alternator
15th	1st	Expected Questions Discussion & Practice Test 1
	2nd	Expected Questions Discussion & Practice Test 2
	3rd	Expected Questions Discussion & Practice Test 3
	4th	Expected Questions Discussion & Practice Test 4