Lesson Plan of Electrical Measurement & Instrumentation

Discipline: Electrical Engineering	Semester:-4th	Name Of The Teaching Faculty:-SMRUTIREKHA MOHANTY
Subject:- Electrical Measurement & Instrumentation	No. Of Days/Week Class Allotted:-5	No. Of Weeks:-15 DATE- 04-02-2025 to 17-05-2025
Week	**No. Of Class**	**Topic To Be Taught**
1st	1st	Define accuracy, precision, errors, resolutions sensitivity and tolerance..
	2nd	Classification of measuring instruments..
	3rd	Explain deflecting, controlling and damping arrangements in indicating type of instruments.
	4th	calibration of instruments
	5th	Revision of previously taught topic and doubt clearing
2nd	1st	Introduction to analog ammeters and voltmeters
	2nd	Describe construction, principle of operation, errors, ranges merits and demerits of: Moving iron type instruments.
	3rd	Permanent magnet moving coil type instruments..
	4th	Pmmc.
	5th	Revision of previously taught topic and doubt clearing
3rd	1st	Dynamometer type instruments
	2nd	Continue emmc
	3rd	Rectifier type instruments
	4th	Rectifier type instruments
	5th	Revision of previously taught topic and doubt clearing
4th	1st	Induction type instruments
	2nd	Induction type instruments
	3rd	Extend the range of instruments by use of shunts and multipliers.
	4th	Solve numerical
	5th	Problem solve
5th	1st	Introduction to wattmeters and measurement of power
	2nd	Describe construction, principle of working of dynamometer type wattmeter. (lpf type)
	3rd	Describe construction, principle of working of dynamometer type wattmeter. (upf type)
	4th	The errors in dynamometer type wattmeter..
	5th	Revision
6th	1st	Methods of their correction
	2nd	Discuss induction type watt meters.
	3rd	Induction type wattmeter
	4th	Numerical solve

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	5th	Energy meters and measurement of energy
7th	1st	introduction.
	2nd	Single phase induction type energy meters – construction, working principle.
	3rd	Compensation & adjustments.
	4th	Continue single phase induction type energy meters
	5th	Problem discussion
8th	1st	Continue single phase induction type energy meters
	2nd	Continue single phase induction type energy meters
	3rd	Testing of energy meters.
	4th	Continue testing of energy meters.
	5th	Doubt clearing classes
9th	1st	Measurement of speed, frequency and power factor
	2nd	tachometers
	3rd	Types and working principles of tachometer
	4th	Principle of operation and construction of mechanical type frequency meters
	5th	Revision of previous topic
10th	1st	Principle of operation and construction of electrical type frequency meters
	2nd	Principle of operation and construction of mechanical type frequency meters
	3rd	Principle of operation and working of dynamometer type single phase power factor meters.
	4th	Principle of operation and working of dynamometer type three phase power factor meters.
	5th	Brief discussion of previous chapter
11th	1st	Measurement of resistance, inductance& capacitance Classification of resistance
	2nd	Measurement of low resistance by potentiometer method. .
	3rd	Measurement of medium resistance by wheat stone bridge method.
	4th	Measurement of high resistance by loss of charge method.
	5th	Problem solve
12th	1st	Construction, principle of operations of megger & earth tester for insulation resistance and earth resistance measurement respectively.
	2nd	Construction and principles of multimeter. (analog and digital)
	3rd	Measurement of inductance by maxewell's bridge method.
	4th	Measurement of capacitance by schering bridge method
	5th	Problem solve
13th	1st	Sensors and transducer

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		Define transducer, sensing element or detector element and transduction elements. Classify transducer. Give examples of various class of transducer.
	2nd	Resistive transducer
	3rd	Linear and angular motion potentiometer
	4th	Thermistor and resistance thermometers
	5th	Wire resistance strain gauges
14th	1st	Inductive transducer Principle of linear variable differential transformer (lvdt) uses of LVDT
	2nd	Capacitive transducer. General principle of capacitive transducer
	3rd	Variable area capacitive transducer. Change in distance between plate capacitive transducer.
	4th	Piezo electric transducer and hall effect transducer with their applications
	5th	Revision of previous topic
15th	1st	Oscilloscope Introduction
	2nd	Principle of operation of cathode ray tube.
	3rd	Principle of operation of oscilloscope (with help of block diagram).
	4th	Measurement of dc voltage & current
	5th	Measurement of ac voltage, current, phase & frequency

4/12/25
Teaching Faculty

19/02/2025
HOD, EE