

Discipline:- Electrical Engineering	Semester:- 4 th	Name of the teaching faculty:- Lect. NIRMALA KUMAR SAHU
Subject-Electrical Measurement & Instrumentation	No. of days/ per week class allotted:-4	Semester from:-10-03-2022 to 22-05-2022
Week	Class day	Theory
1 st	1 st	1. MEASURING INSTRUMENTS 1.1 Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance.
	2 nd	1.2 Classification of measuring instruments.
	3 rd	1.3 Explain Deflecting, controlling and damping arrangements in indicating type of
	4 th	1.3 Explain Deflecting, controlling and damping arrangements in indicating type of instruments
2 nd	1 st	1.4 Calibration of instruments.
	2 nd	2. ANALOG AMMETERS AND VOLTMETERS 2.1. Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1.1 Moving iron type instruments.
	3 rd	2.1. Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1.1 Moving iron type instruments
	4 th	2.1.2 Permanent Magnet Moving coil type instruments
3 rd	1 st	2.1.3 Dynamometer type instruments
	2 nd	2.1.4 Rectifier type instruments
	3 rd	2.1.5 Induction type instruments
	4 th	2.1.5 Induction type instruments
4 th	1 st	2.2 Extend the range of instruments by use of shunts and Multipliers.
	2 nd	2.3 Solve Numerical .
	3 rd	2.3 Solve Numerical .
	4 th	3. WATTMETERS AND MEASUREMENT OF POWER 3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)
5 th	1 st	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	2 nd	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	3 rd	3.2 The Errors in Dynamometer type wattmeter and methods of their correction.
	4 th	3.2 The Errors in Dynamometer type wattmeter and methods of their correction.
6 th	1 st	3.3 Discuss Induction type watt meters
	2 nd	3.3 Discuss Induction type watt meters
	3 rd	3.3 Discuss Induction type watt meters
	4 th	4. ENERGY METERS AND MEASUREMENT OF ENERGY

		4.1 Introduction
7 th	1 st	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	2 nd	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	3 rd	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	4 th	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
8 th	1 st	4.3 Testing of Energy Meters
	2 nd	4.3 Testing of Energy Meters
	3 rd	4.3 Testing of Energy Meters
	4 th	5. MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR 5.1 Tachometers, types and working principles
9 th	1 st	5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters
	2 nd	5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters
	3 rd	5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters
	4 th	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
10 th	1 st	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
	2 nd	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
	3 rd	6. MEASUREMENT OF RESISTANCE, INDUCTANCE & CAPACITANCE 6.1 Classification of resistance
	4 th	6.1..1. Measurement of low resistance by potentiometer method 6.1..2. Measurement of medium resistance by wheat Stone bridge method. 6.1..3. Measurement of high resistance by loss of charge method
11 th	1 st	. 6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively
	2 nd	6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively
	3 rd	6.3 Construction and principles of Multimeter. (Analog and Digital)
	4 th	6.3 Construction and principles of Multimeter. (Analog and Digital)
12 th	1 st	6.4 Measurement of inductance by Maxwell's Bridge method
	2 nd	6.5 Measurement of capacitance by Schering Bridge method
	3 rd	7. SENSORS AND TRANSDUCER 7.1. Define Transducer, sensing element or detector element and transduction elements.
	4 th	7.2. Classify transducer. Give examples of various class of transducer
13 th	1 st	7.3. Resistive transducer 7.3.1 Linear and angular motion potentiometer.

	2 nd	7.3.2 Thermistor and Resistance thermometers. 7.3.3 Wire Resistance Strain Gauges
	3 rd	7.4. Inductive Transducer
	4 th	7.4.1 Principle of linear variable differential Transformer (LVDT) 7.4.2 Uses of LVDT.
14 th	1st	7.5. Capacitive Transducer. 7.5.1 General principle of capacitive transducer.
	2 nd	7.5.2 Variable area capacitive transducer. 7.5.3 Change in distance between plate capacitive transducer
	3 rd	7.6. Piezo electric Transducer and Hall Effect Transducer with their applications
	4 th	8. OSCILLOSCOPE 8.1. Principle of operation of Cathode Ray Tube.
15 th	1st	8.2. Principle of operation of Oscilloscope (with help of block diagram).
	2 nd	8.3. Measurement of DC Voltage & current.
	3 rd	8.4. Measurement of AC Voltage, current, phase & frequency.
	4 th	8.4. Measurement of AC Voltage, current, phase & frequency.

Teaching Faculty

H.O.D E.E

PRINCIPAL

G.I.E.T. POLYTECHNIC, CUTTACK