GIET POLYTECHNIC, JAGATPUR, CUTTACK LESSON PLAN

DISCIPLINE:- ELECTRICAL ENGINEERING	SEMESTER:-4th	NAME OF THE TEACHING FACULTY: DWITIKRUSHNABEHERA
SUBJECT-ELECTRICAL MEASUREMENT &INSTRUMENTATION	NO.OFDAYS/PER WEEK CLASS ALLOTTED:- 4+1{TUTORIAL)	SEMESTER FROM DATE:-04-02-2025 TO DATE:-17-05-2025 NUMBER OF WEEKS :- 15
Week	Class day	Theory
1st	1st	**1. MEASURING INSTRUMENTS** 1.1 Define Accuracy, precision, Errors, Resolutions, Sensitivity and tolerance.
	2nd	1.2Classification of measuring instruments.
	3rd	1.3Explain Deflecting, controlling and damping arrangements in indicating type of instruments.
	4th	1.3ExplainDeflecting,controllinganddampingarrangementsin indicating type of instruments
	5th	**TUTORIAL**
2nd	1st	1.4Calibrationofinstruments.
	2nd	**2. ANALOG AMMETERS AND VOLTMETERS** 2.1. Describe Construction, principle of operation, errors, ranges, merits and demerits. 2.1.1 Moving iron type instruments.
	3rd	2.1. Describe Construction, principle of operation, errors, ranges, merits and demerits of: 2.1.1 Moving iron type instruments
	4th	2.1.2Permanent Magnet Moving coil type instruments
	5th	**TUTORIAL**
3rd	1st	2.1.3Dynamometer type instruments
	2nd	2.1.4Rectifier type instruments
	3rd	2.1.5Induction type instruments
	4th	2.1.5Induction type instruments
	5th	**TUTORIAL**
4th	1st	2.2Extendthe range of instruments by use of shunts and Multipliers.
	2nd	2.3Solve Numerical.
	3rd	2.3Solve Numerical.
	4th	**3. WATTMETERS AND MEASUREMENT OF POWER** 3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	5th	**TUTORIAL**
5th	1st	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	2nd	3.1 Describe Construction, principle of working of Dynamometer type wattmeter.(LPF and UPF type)
	3rd	3.2The Errors in Dynamometer type wattmeter and methods of their correction.

	4th	3.2The Errors in Dynamometer type wattmeter and methods of their Correction.
	5th	**TUTORIAL**
6th	1st	3.3Discuss Induction type wattmeter's
	2nd	3.3Discuss Induction type wattmeter's
	3rd	3.3Discuss Induction type wattmeter's
	4th	**TUTORIAL**
	5th	**4.ENERGY METERS AND MEASUREMENT OF ENERGY**
		4.1 Introduction
7th	1st	4.2Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	2nd	4.2Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	3rd	4.2Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	4th	4.2Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	5th	**TUTORIAL**
8th	1st	4.3Testing of Energy Meters
	2nd	4.3Testing of Energy Meters
	3rd	4.3Testing of Energy Meters
	4th	**5. MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR** 5.1 Tachometers, types and working principles
	5th	**TUTORIAL**
9th	1st	5.2Principle of operation and construction of Mechanical and Electrical resonance. Type frequency meters
	2nd	5.2Principle of operation and construction of Mechanical and Electrical Resonance Type frequency meters
	3rd	5.2Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters
	4th	5.3Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
	5th	**TUTORIAL**
10th	1st	5.3Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
	2nd	5.3Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
	3rd	**6. MEASUREMENT OF RESISTANCE, INDUCTANCE & CAPACITANCE** 6.1 Classification of resistance 6.1..1.Measurement of low resistance by potentiometer method
	4th	6.1 . Measurement of medium resistance by Wheatstone bridge Method. 6.13.Measurement of high resistance by loss of charge method.
	5th	**TUTORIAL**

11th	1st	6.2Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively
	2nd	6.2 Construction, principle of operations of Megger & Earth tester for insulation Resistance and earth resistance measurement respectively
	3rd	6.3Construction and principles of Multimeter. (Analog and Digital)
	4th	6.3Constructionandprinciplesof MultiMate.(Analog and Digital)
	5th	**TUTORIAL**
12th	1st	6.4 Measurement of inductance by Maxwell's Bridge method
	2nd	6.5 Measurement of inductance by Maxwell's Bridge method
	3rd	**7. SENSORS AND TRANSDUCER** 7.1. Define Transducer, sensing element or detector element and transduction elements.
	4th	7.2. Classify transducer. Give examples of various class of transducer
	5th	**TUTORIAL**
13th	1st	7.3. Resistive transducer 7.3.1 Linear and angular motion potentiometer.
	2nd	7.3.2 Thermistor and Resistance thermometers. 7.3.3 Wire Resistance Strain Gauges
	3rd	7.4.InductiveTransducer
	4th	7.4.1 Principle of linear variable differential Transformer(LVDT) 7.4.2 Uses of LVDT.
	5th	**TUTORIAL**
14th	1st	7.5. Capacitive Transducer. 7.5.1 General principle of capacitive transducer.
	2nd	7.5.2 Variable area capacitive transducer. **7.5.3 Change in distance between plate capacitive transducer**
	3rd	7.6. Piezoelectric Transducer and Hall Effect Transducer with their applications
	4th	**8. OSCILLOSCOPE** 8.1. Principle of operation of Cathode Ray Tube.
	5th	**TUTORIAL**
15th	1st	8.2. Principle of operation of Oscilloscope (with the help of block diagram).
	2nd	8.2. Measurement of DC Voltage & current.
	3rd	8.4. Measurement of AC Voltage, current, phase & frequency.
	4th	8.5. Measurement of AC Voltage, current, phase & frequency.
	5th	**TUTORIAL**

31/01/25
SIGN. OF TEACHING FACULTY

31/01/25
SIGN. OF H.O.D.

31/1/25
SIGN. OF PRINCIPAL
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