

ACADEMIC LESSON PLAN OF SUMMER 2024

Discipline: Electrical	Semester: 4 th (Section-A)	Name of the Teaching Faculty: Lucky Rani Behuria
Subject: Electrical measurement & instrumentation	No. of days/per week class allotted: 4p/week Tutorial: 1p/week	Semester From: 16 th January 2024 to 26 th April 2024
Week	Class Day	Theory Topics
1 st	1 st	1. MEASURING INSTRUMENTS 1.1. Definition of accuracy, precision, errors, resolution sensitivity and tolerance
	2 nd	1.2. Classification of measuring instruments.
	3 rd	1.3. Explaining Deflecting, controlling and damping arrangements in indicating type of instruments
	4 th	1.4. Explaining Deflecting, controlling and damping arrangements in indicating type of instruments
	5 th	Tutorial
2 nd	1 st	1.5. Calibration of instruments.
	2 nd	2. ANALOG AMMETERS AND VOLTMETERS Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1 Moving iron type instruments.
	3 rd	2.1 Moving iron type instruments.(contd.)
	4 th	2.2 Permanent Magnet Moving coil type instruments.
	5 th	Tutorial
3 rd	1 st	2.3 Dynamometer type instruments
	2 nd	2.4 Rectifier type instruments
	3 rd	2.5 Induction type instruments
	4 th	2.6 Extend the range of instruments by use of shunts and Multipliers
	5 th	Tutorial
4 th	1 st	2.6 Extend the range of instruments by use of shunts and Multipliers(contd.)
	2 nd	2.7 Solving numerical
	3 rd	2.7 Solve Numerical(contd.)
	4 th	3. WATTMETERS AND MEASUREMENT OF POWER 3.1 Described Construction Dynamometer type wattmeter. (LPF and UPF type)
	5 th	Tutorial
5 th	1 st	3.2 Described principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	2 nd	3.2 Described principle of working of Dynamometer type wattmeter. (LPF and UPF type)(contd.)
	3 rd	3.2 Described principle of working of Dynamometer type wattmeter. (LPF and UPF type)(contd.)
	4 th	3.3 The Errors in Dynamometer type wattmeter and methods of their correction.
	5 th	Tutorial
6 th	1 st	3.3 The Errors in Dynamometer type wattmeter and methods of their correction. (contd.)
	2 nd	3.5 Discuss Induction type watt meters
	3 rd	3.5 Discuss Induction type watt meters(contd.)
	4 th	4. ENERGY METERS AND MEASUREMENT OF ENERGY 4.1. Introduction
	5 th	Tutorial
7 th	1 st	4.2. Single Phase Induction type Energy meters – construction.
	2 nd	4.3. Single Phase Induction type Energy meters – working principle
	3 rd	4.3. Single Phase Induction type Energy meters – working principle (contd.)
	4 th	4.4 Single Phase Induction type Energy meters – their compensation and adjustment
	5 th	Tutorial
8 th	1 st	4.4 Single Phase Induction type Energy meters – their compensation and adjustment(contd.)
	2 nd	4.5. Testing of Energy Meters.
	3 rd	4.5. Testing of Energy Meters.(contd.)
	4 th	5. MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR

		5.1 Tachometers, types and working principles 5.2 Principle of operation and construction of Mechanical resonance Type frequency meters.
	5 th	Tutorial
9 th	1 st	5.3 Principle of operation and construction of Electrical resonance Type frequency meters.
	2 nd	5.3 Principle of operation and construction of Electrical resonance Type frequency meters.(contd)
	3 rd	5.4.Principle of operation and working of Dynamometer type single phase and three phase power factor meters.(contd.)
	4 th	5.5.Principle of operation and working of Dynamometer type single phase and three phase power factor meters.(contd.)
	5 th	Tutorial
10 th	1 st	6. MEASUREMENT OF RESISTANCE, INDUCTANCE& CAPACITANCE 6.1. Classification of resistance 6.2 Measurement of low resistance by potentiometer method. .
	2 nd	6.3 Measurement of medium resistance by wheat Stone bridge method.
	3 rd	6.4 Measurement of high resistance by loss of charge method
	4 th	6.5 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively
	5 th	Tutorial
11 th	1 st	6.6 Construction and principles of Multimeter. (Analog and Digital)
	2 nd	6.6 Construction and principles of Multimeter. (Analog and Digital)
	3 rd	6.7 Measurement of inductance by Maxwell's Bridge method
	4 th	6.8 Measurement of capacitance by Schering Bridge method
	5 th	Tutorial
12 th	1 st	7.SENSORS AND TRANSDUCER 7.1. Define Transducer, sensing element or detector element and transduction elements
	2 nd	7.2. Classify transducer. Give examples of various class of transducer
	3 rd	7.3 Linear and angular motion potentiometer.
	4 th	7.3 Linear and angular motion potentiometer..(contd)
	5 th	Tutorial
13 th	1 st	7.4Thermistor and Resistance thermometers
	2 nd	7.5 Wire Resistance Strain Gauges
	3 rd	7.6 Principle of linear variable differential Transformer (LVDT) AND USES OF LVDT
	4 th	7.6 Principle of linear variable differential Transformer (LVDT) AND USES OF LVDT
	5 th	Tutorial
14 th	1 st	General principle of capacitive transducer AND 7.7 Variable area capacitive transducer.
	2 nd	7.8 Change in distance between plate capacitive transducer.
	3 rd	7.9 Piezo electric Transducer and Hall Effect Transducer with their applications.
	4 th	8.OSCILLOSCOPE 8.1. Principle of operation of Cathode Ray Tube.
	5 th	Tutorial
15 th (Extra class)	1 st	8.2. Principle of operation of Oscilloscope (with help of block diagram)
	2 nd	8.2. Principle of operation of Oscilloscope (with help of block diagram)(contd.).
	3 rd	8.3Measurement of DC Voltage and current
	4 th	8.4 Measurement of AC voltage,current,phase and frequency
	5 th	Tutorial

Lucky Pami Behuria

Signature of Teaching Faculty