

ACADEMIC LESSON PLAN OF SUMMER 2023

Discipline: Electrical	Semester: 4 th (Section-A)	Name of the Teaching Faculty: Lucky Rani Behuria
Subject: Electrical measurement & instrumentation TH.3	No. of days/per week class allotted: 4p/week Tutorial: 1p/week	Semester From: 14 th Feb 2023 to 23 rd May 2023
Week	Class Day	Theory Topics
1 st	1 st	Tutorial
	2 nd	1. MEASURING INSTRUMENTS 1.1. Definition of accuracy, precision, errors, resolution sensitivity and tolerance
	3 rd	1.2. Classification of measuring instruments.
	4 th	1.3. Explaining Deflecting, controlling and damping arrangements in indicating type of instruments
	5 th	1.4. Explaining Deflecting, controlling and damping arrangements in indicating type of instruments
2 nd	1 st	Tutorial
	2 nd	1.5. Calibration of instruments.
	3 rd	2. ANALOG AMMETERS AND VOLTMETERS Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1 Moving iron type instruments.
	4 th	2.1 Moving iron type instruments.(contd.)
	5 th	2.2 Permanent Magnet Moving coil type instruments.
3 rd	1 st	Tutorial
	2 nd	2.3 Dynamometer type instruments
	3 rd	2.4 Rectifier type instruments
	4 th	2.5 Induction type instruments
	5 th	2.6 Extend the range of instruments by use of shunts and Multipliers
4 th	1 st	Tutorial
	2 nd	2.6 Extend the range of instruments by use of shunts and Multipliers(contd.)
	3 rd	2.7 Solving numerical
	4 th	2.7 Solve Numerical(contd.)
	5 th	3. WATTMETERS AND MEASUREMENT OF POWER 3.1 Described Construction Dynamometer type wattmeter. (LPF and UPF type)
5 th	1 st	Tutorial
	2 nd	3.2 Described principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	3 rd	3.2 Described principle of working of Dynamometer type wattmeter. (LPF and UPF type)(contd.)
	4 th	3.2 Described principle of working of Dynamometer type wattmeter. (LPF and UPF type)(contd)
	5 th	3.3 The Errors in Dynamometer type wattmeter and methods of their correction.
6 th	1 st	Tutorial
	2 nd	3.3 The Errors in Dynamometer type wattmeter and methods of their correction. (contd)
	3 rd	3.5 Discuss Induction type watt meters
	4 th	3.5 Discuss Induction type watt meters(contd.)
	5 th	4. ENERGY METERS AND MEASUREMENT OF ENERGY

		4.1.Introduction
7 th	1 st	Tutorial
	2 nd	4.2. Single Phase Induction type Energy meters – construction.
	3 rd	4.3. Single Phase Induction type Energy meters – working principle
	4 th	4.3. Single Phase Induction type Energy meters – working principle (contd.)
	5 th	4.4 Single Phase Induction type Energy meters – their compensation and adjustment
8 th	1 st	4.4 Single Phase Induction type Energy meters – their compensation and adjustment (Contd)
	2 nd	4.4 Single Phase Induction type Energy meters – their compensation and adjustment(contd.)
	3 rd	4.5.Testing of Energy Meters.
	4 th	TUTORIAL
	5 th	4.5.Testing of Energy Meters.(contd.)
9 th	1 st	5.MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR 5.1 Tachometers, types and working principles
	2 nd	5.2 Principle of operation and construction of Mechanical resonance Type frequency meters.
	3 rd	5.2 Principle of operation and construction of Mechanical Type frequency meters.(contd)
	4 th	5.3 Principle of operation and construction of Electrical resonance Type frequency meters.
	5 th	5.4 Principle of operation and construction of Electrical resonance Type frequency meters.(contd)
10 th	1 st	5.5 Principle of operation and working of Dynamometer type single phase and three phase power factor meters.(contd.)
	2 nd	6. MEASUREMENT OF RESISTANCE, INDUCTANCE& CAPACITANCE 6.1. Classification of resistance
	3 rd	6.2 Measurement of low resistance by potentiometer method. .
	4 th	TUTORIAL
	5 th	6.3 Measurement of medium resistance by wheat Stone bridge method.
11 th	1 st	6.4 Measurement of high resistance by loss of charge method
	2 nd	6.5 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively
	3 rd	6.6 Construction and principles of Multimeter. (Analog and Digital)
	4 th	6.7 Measurement of inductance by Maxewell's Bridge method
	5 th	6.7 Measurement of inductance by Maxewell's Bridge method
12 th	1 st	6.8 Measurement of capacitance by Schering Bridge method
	2 nd	Tutorial
	3 rd	7.SENSORS AND TRANSDUCER
	4 th	7.1. Define Transducer, sensing element or detector element and transduction elements 7.2. Classify transducer. Give examples of various class of transducer
	5 th	7.3 Linear and angular motion potentiometer.
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	Tutorial
	5 th	General principle of capacitive transducer AND 7.7 Variable area capacitive transducer.
14 th	1 st	7.8 Change in distance between plate capacitive transducer.
	2 nd	7.9 Piezo electric Transducer and Hall Effect Transducer with their applications.
	3 rd	8.OSCILLOSCOPE 8.1. Principle of operation of Cathode Ray Tube.

	4 th	Tutorial
	5 th	8.2. Principle of operation of Oscilloscope (with help of block diagram)
15th (EXTRA CLASS)	1 st	8.2. Principle of operation of Oscilloscope (with help of block diagram)(contd.).
	2 nd	8.3 Measurement of DC Voltage and current
	3 rd	8.3 Measurement of DC Voltage and current
	4 th	8.4 Measurement of AC voltage,current,phase and frequency
	5 th	8.4 Measurement of AC voltage,current,phase and frequency

Signature of Teaching Faculty

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	2 nd	4.5. Testing of Energy Meters.
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	3 rd	Tutorial
	4 th	5.3 Principle of operation and construction of Electrical resonance Type frequency meters.(contd)
	5 th	5.3 Principle of operation and construction of Electrical resonance Type frequency meters.(contd)
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