GANDHI SCHOOL OF ENGINEERING

BHABANDHA,BERHAMPUR

BRANCH:- ELECTRICAL ENGINEERING

SEMESTER:- 4th

SUBJECT-:- ELECTRICAL MEASUREMENT & INSTRUMENTATION

NAME OF FACULTY- ER.RABINDRA DAS & ER .M GOUDA

			Topic to be taken			Actual topic taken		
SL. No	**Topic/Module**	**No. of period**	**Details of the topics**	**Date**	**Topic No.**	**Topic Name**	**Date**	**Remarks**
1	MEASURING INSTRUMENTS	**05**	1.1 Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance. 1.2 Classification of measuring instruments. 1.3 Explain Deflecting, controlling and damping arrangements in indicating type of instruments. 1.4 Calibration of instruments.	**18.01.2024 TO 24.01.2024**	**1.1** **1.2** **1.3** **1.4**	1.1 Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance. 1.2 Classification of measuring instruments. 1.3 Explain Deflecting, controlling and damping arrangements in indicating type of instruments. 1.4 Calibration of instruments	18.01.2024 19.01.2024 20.01.2024 22.01.2024 24.01.2024	
2	ANALOG AMMETERS AND VOLTMETERS	**10**	2.1. Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1.1 Moving iron type instruments. 2.1.2 Permanent Magnet Moving coil type instruments. 2.1.3 Dynamometer type instruments 2.1.4 Rectifier type instruments 2.1.5 Induction type	**25.01.2024 TO 09.02.2024**	**2.1** **2.1.1** **2.1.2** **2.1.3** **2.1.4** **2.1.5** **2.2** **2.3**	2.1. Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1.1 Moving iron type instruments. 2.1.2 Permanent Magnet Moving coil type instruments. 2.1.3 Dynamometer type instruments 2.1.4 Rectifier type instruments 2.1.5 Induction type instruments 2.2 Extend the range of instruments by use of shunts and Multipliers.	25.01.2024 31.01.2024 01.02.2024 02.02.2024 03.02.2024 05.02.2024 06.02.2024 07.02.2024 08.02.2024 09.02.2024	

			instruments 2.2 Extend the range of instruments by use of shunts and Multipliers. 2.3 Solve Numerical			2.3 Solve Numerical		
3	WATTMETERS AND MEASUREMENT OF POWER	**08**	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type) 3.2 The Errors in Dynamometer type wattmeter and methods of their correction. 3.3 Discuss Induction type watt meters.	**10.02.2024 TO 20.02.2024**	**3.1** **3.2** **3.3**	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type) 3.2 The Errors in Dynamometer type wattmeter and methods of their correction. 3.3 Discuss Induction type watt meters.	10.02.2024 12.02.2024 13.02.2024 15.022024 16.02.2024 17.02.2024 19.02.2024 20.02.2024	

4	ENERGYMETERS AND MEASUREMENT OF ENERGY	**08**	4.1 Introduction 4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments. 4.3 Testing of Energy Meters.	**21.02.2024 TO 29.02.2024**	**4.1** **4.2** **4.3**	4.1 Introduction 4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments. 4.3 Testing of Energy Meters.	21.02.2024 22.02.2024 23.02.2024 24.02.2024 26.02.2024 27.02.2024 28.02.2024 29.02.2024	
5	MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR	**07**	5.1 Tachometers, types and working principles 5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters. 5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters.	**01.03.2024 TO 12.03.2024**	**5.1** **5.2** **5.3**	5.1 Tachometers, types and working principles 5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters. 5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters.	01.03.2024 02.03.2024 04.03.2024 06.03.2024 07.03.2024 11.03.2024 12.03.2024	
6	MEASUREMENT OF RESISTANCE, INDUCTANCE& CAPACITANCE	**08**	6.1 Classification of resistance 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. 6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.	**13.03.2024 TO 21.03.2024**	**6.1** **6.1.2** **6.1.3** **6.2** **6.3**	6.1 Classification of resistance 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. 6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively. 6.3 Construction and principles of Multimeter. (Analog and Digital)	13.03.2024 14.03.2024 15.03.2024 16.03.2024 18.02.2024 19.03.2024	

			6.3 Construction and principles of Multimeter. (Analog and Digital) 6.4 Measurement of inductance by Maxewell's Bridge method. 6.5 Measurement of capacitance by Schering Bridge method		**6.4** **6.5**	6.4 Measurement of inductance by Maxewell's Bridge method. 6.5 Measurement of capacitance by Schering Bridge method	20.03.2024 21.03.2024	

7	SENSORS AND TRANSDUCER	**09**	7.1. Define Transducer, sensing element or detector element and transduction elements. 7.2. Classify transducer. Give examples of various class of transducer. 7.3. Resistive transducer 7.3.1 Linear and angular motion potentiometer. 7.3.2 Thermistor and Resistance thermometers. 7.3.3 Wire Resistance Strain Gauges 7.4. Inductive Transducer 7.4.1 Principle of linear variable differential Transformer (LVDT) 7.4.2 Uses of LVDT. 7.5. Capacitive Transducer. 7.5.1 General principle of capacitive transducer. 7.5.2 Variable area capacitive transducer. 7.5.3 Change in distance between plate capacitive transducer. 7.6. Piezo electric Transducer and Hall Effect Transducer with their applications.	**22.03.2024 TO 05.04.2024**	**7.1** **7.2** **7.3** **7.3.1** **7.3.2** **7.3.3** **7.4** **7.4.1** **7.4.2** **7.5** **7.5.1** **7.5.2** **7.5.3** **7.6**	7.1. Define Transducer, sensing element or detector element and transduction elements. 7.2. Classify transducer. Give examples of various class of transducer. 7.3. Resistive transducer 7.3.1 Linear and angular motion potentiometer. 7.3.2 Thermistor and Resistance thermometers. 7.3.3 Wire Resistance Strain Gauges 7.4. Inductive Transducer 7.4.1 Principle of linear variable differential Transformer (LVDT) 7.4.2 Uses of LVDT. 7.5. Capacitive Transducer. 7.5.1 General principle of capacitive transducer. 7.5.2 Variable area capacitive transducer. 7.5.3 Change in distance between plate capacitive transducer. 7.6. Piezo electric Transducer and Hall Effect Transducer with their applications.	22.03.2024 23.03.2024 27.03.2024 28.03.2024 30.03.2024 02.04.2024 03.04.2024 04.04.2024 05.04.2024	

8	OSCILLOSCOPE	**05**	8.1. Principle of operation of Cathode Ray Tube. 8.2. Principle of operation of Oscilloscope (with help of block diagram). 8.3. Measurement of DC Voltage & current. 8.4. Measurement of AC Voltage, current, phase & frequency.	**06.04.2024 TO 12.04.2024**	**8.1** **8.2** **8.3** **8.4**	8.1. Principle of operation of Cathode Ray Tube. 8.2. Principle of operation of Oscilloscope (with help of block diagram). 8.3. Measurement of DC Voltage & current. 8.4. Measurement of AC Voltage, current, phase & frequency.	06.04.2024 08.04.2024 09.04.2024 10.04.2024 12.04.2024	

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