

<b>Discipline – Electrical Engg</b>	<b>4<sup>th</sup> SEMESTER</b>	<b>NAME OF THE TEACHING FACULTY- SUBHRASHREE DASH, PTGF (ELECT.) SESSION – 2024-25 (SUMMER)</b>
<b>Sub- EM&amp;I</b>	<b>No Of Days Per Week Class Allotted- 5p</b>	<b>SEMESTER FROM 04.02.2024 TO 17.05.2024 No Of Week – 16 Weeks</b>
<b>WEEK</b>	<b>CLASS DAY</b>	<b>THEORY</b>
1 <sup>st</sup> week	1 <sup>ST</sup> day 2 <sup>nd</sup> day 3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>TH</sup> day	<b>1. MEASURING INSTRUMENTS</b> 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.
2 <sup>nd</sup> week	1 <sup>ST</sup> day 2 <sup>nd</sup> day 3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	1.4 Calibration of instruments <b>2. ANALOG AMMETERS AND VOLTMETERS</b> 2.1. Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1.1 Moving iron type instruments.
3 <sup>rd</sup> week	1 <sup>ST</sup> day 2 <sup>nd</sup> day 3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	2.1.2 Permanent Magnet Moving coil type instruments. 2.1.3 Dynamometer type instruments 2.1.4 Rectifier type instruments.
4 <sup>th</sup> week	1 <sup>ST</sup> day 2 <sup>nd</sup> day 3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	2.1.5 Induction type instruments 2.2 Extend the range of instruments by use of shunts and Multipliers. 2.3 Numerical <b>3. WATTMETERS AND MEASUREMENT OF POWER</b> 3.1 Describe Construction of wattmeter
5 <sup>th</sup> week	1 <sup>ST</sup> day 2 <sup>nd</sup> day 3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	3.1.1 Principle of working of Dynamometer type wattmeter. 3.1.2 LPF and UPF type 3.1.3 production of torque and measurement of power 3.2 The Errors in Dynamometer type wattmeter and methods of their correction.

6 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	3.3 Induction type watt meters. 3.3.1 construction 3.3.2 phasor diagram and deflecting torque production <b>4. ENERGYMETERS AND MEASUREMENT OF ENERGY</b> 4.1 Introduction 4.2 Single Phase Induction type Energy meters – construction,
7 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	working principle Errors in energy meter their compensation & adjustments. 4.3 Testing of Energy Meters Numerical related to energy meter Class test upto 4 <sup>th</sup> chapter
8 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	<b>5. MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR</b> 5.1 Tachometers, types working principle
9 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	5.2 Principle of operation and construction of Electrical resonance Type frequency meters. Principle of operation and construction of Mechanical resonance Type frequency meters.
10 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters <b>6. MEASUREMENT OF RESISTANCE, INDUCTANCE &amp; CAPACITANCE</b> 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.
11 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively. <b>Taken CL</b>
12 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	Taken CL 6.3 Construction and principles of Multimeter. Analog Digital

13 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	6.4 Measurement of inductance by Maxwell's Bridge method. 6.5 Measurement of capacitance by Schering Bridge method <b>7. SENSORS AND TRANSDUCER</b> 7.1. Define Transducer, sensing element or detector element and transduction elements. 7.2. Classify transducer. Give examples of various class of transducer.
14 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	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
15 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	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.
16 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day 3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	8. OSCILLOSCOPE 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

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