

ORISSA SCHOOL OF ENGINEERING

BANTHAPALLI, BERHAMPUR

3rd SEM SUBJECT- TH4. ELECTRONICS MEASUREMENT & INSTRUMENTATION

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SL NO. CHAPTER	TOPICS	NO OF PERIODS ASSIGNED BY SCTE&VT	PLANNING DATES	REMARKS
1	Qualities of Measurement Discuss the Static Characteristics, Accuracy, sensitivity, reproducibility & static error of instruments Dynamic characteristics& speed of instruments. 1-4 Errors of an instrument & explain various types.	05	1 st	
2	Indicating Instruments 2.1 Introduction to Indicator & Display devices & its types 2.2 Basic principle of meter movement, permanent magnetic moving coil movement & its advantages & disadvantages. 2.3 Operation of Moving Iron Instrument 2.4 Basic principle of operation of DC Ammeter and Multi range Ammeter 2.5 Basic principle of operation of AC Ammeter and Multi range Ammeter 2-6 Basic principle of operation of DC Voltmeter and its applications 2.7 Basic principle of operation of AC Voltmeter and its application 2.8 Basic	10	2 ND & 3 RD	

	principle of Ohm Meter (Series & Shunt type) 2.9 Basic principle of Analog Multimeter, its types & applications 2-10 Operation of Q meter and its essentials			
3	Digital Instruments Principle of operation of Ramp type Digital Voltmeter & applications Operation of display of 3 1/2, 4 1/2– Digital Multimeter & Resolution and Sensitivity Basic principle of operation of working of Digital Multimeter's types & applications Basic principle of operation of working of Digital Frequency Meter Operation of working of Digital Measurement of Time Measurement of Frequency. Principle of operation of working of Digital Tachometer 3rd Semester ETC 14 Principle of operation of working of Automation in Digital Instruments (Polarity Indication, Ranging, Zeroing & Fully Automatic) Block diagram of LCR meter & its working principle.	10	4 TH & 5 TH	
4	Oscilloscope Basic principle of Oscilloscope & its Block Diagram Basic principle & Block diagram of CRO, Dual Trace Oscilloscope & its specification CRO Measurements, Lissajous figures Applications of Oscilloscope (Voltage period & frequency measurement) Operation of Digital Storage Oscilloscope & High frequency Oscilloscope	08	6 TH	

5	Bridges Types of Bridges (DC& Ac Bridges) DC Bridges (Measurement of Resistance by Wheatstone's Bridge) AC bridges (Measurement of inductance by Maxwell's Bridge & by Hay's Bridge) Measurement of capacitance by Schering's Bridge & DeSauty Bridge. Working principle of Q meter its circuit diagram & measurement of Low impedance Measurement of frequency LCR Meter & its measurements	11	7 TH	
6	Transducers & Sensors Parameter, method of Selecting & advantage of Electrical Transducer & Resistive Transducer Working principle of Strain Gauges, define Strain Gauge (No mathematical Derivation) Working principle of LVDT Working principle of capacitive transducers (pressure) Working principle of Load Cell (Pressure Cell) Working principle of Temperature Transducer (RTD, Optical Pyrometer, Thermocouple, Thermister) Working principle of Current transducer and KW Transducer. Working principle of Proximity & Light sensors.	11	8 TH	
7	Signal Generator, Wave Analyser & DAS General aspect & classification of Signal generators Working principle of AF Sine & Square wave generator . 3rd Semester ETC 15 Working principle of the Function Generator	05	9 TH	

	Function of basic Wave Analyser & Spectrum Analyser Basic concept of Data Acquisition System (DAS)			
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