

ACADEMIC LESSON PLAN FOR WINTER -2023



Dept. of Electronics & Telecommunication, RKCAT

Polytechnic, Balasore

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Th4. ELECTRONICS MEASUREMENT & INSTRUMENTATION

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PERIOD	TOPIC COVERED	DATE	REMARKS
UNIT-01 Qualities of Measurement TOTAL PERIOD-05	Discuss the Static Characteristics,		
	Accuracy, sensitivity, reproducibility & static error of instruments		
	Dynamic characteristics & speed of instruments. 1-Errors of an instrument & explain various types		
Unit-2: Indicating Instruments Total-10	Introduction to Indicator & Display devices & its types		
	Basic principle of meter movement, permanent magnetic moving coil movement & its advantages & disadvantages.		

	Operation of Moving Iron Instrument Basic principle of operation of DC Ammeter and Multi range Ammeter		
	Basic principle of operation of AC Ammeter and Multi range Ammeter		
	Basic principle of operation of DC Voltmeter and its		
	Basic principle of operation of AC Voltmeter and its application		
	Basic principle of Ohm Meter (Series & Shunt type)		
	Basic principle Of AnaloMultimeter, its types & applications 2-Operation of Q meter and its essentials		
Unit-03 Digital Instruments TOTALPERIODS -10	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 Multimeterits 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		
	Principle of operation of working of Automation in Digital Instruments (Polarity Indication, Ranging, Zeroing & Fully		

	Automatic)		
	Block diagram of LCR meter & its working principle		
Unit-4: Oscilloscope Totalperiod-08	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		
Unit-5: Total period-11	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		
Transducers TOTAL PERIOD-11	Parameter, method of Selecting & advantage of Electrical Transducer & ResistiveTransducer		
	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, Thermistor)		
	Working principle of Current transducer and KW Transducer.		
	Working principle of Proximity & Light sensors.		
Unit-7 TOTAL PERIOD-05	General aspect & classification of Signal generators		
	Working principle of AF Sine & Square wave generator .		
	Working principle of the Function Generator		
	Function of basic Wave Analyser & Spectrum Analyser		
	Basic concept of Data Acquisition System (DAS)		

