

“PVCNSSK” GOVT. POLYTECHNIC BILASPUR at KALOL
PLANNED THEORY SYLLABUS COVERAGE

PTSC-7.1

GPB		Department: Electrical Engg.		Subject: ELECTRICAL AND ELECTRONICS MEASUREMENT		
		Sem. & Branch: 3rd & Elect. Engg		Duration : 3years		
SYLLABUS COVERAGE		Total Periods: Theory:56 Practical:28				
Sr No	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1	12(1-12)	Fundamentals of Measurements	Measurement: Significance, units, fundamental quantities and standards Classification of Instrument Systems: Null and deflection type instruments Absolute and secondary instruments Analog and digital instruments Static and dynamic characteristics, types of errors, Calibration: need and procedure Classification of measuring instruments: indicating, recording and integrating instruments. Essential requirements of an indicating instruments.			
2	12(13-24)	Measurement of voltage and current	DC Ammeter: Basic, Multi range, Universal shunt, DC Voltmeter: Basic, Multi-range, concept of loading effect and sensitivity AC voltmeter: Rectifier type (half wave and full wave), CT and PT: construction, working and applications. Clamp-on meter.			
3	10(25-34)	Measurement of Electric Power	Analog meters: Permanent magnet moving coil (PMMC) and Permanent magnet moving iron (PMMI) meter, their construction, working, salient features, merits and demerits. Dynamometer type wattmeter: Construction and working Range: Multiplying factor and extension of range using CT and PT Errors and compensations. Active and reactive power measurement: One, two and three wattmeter method. Effect of Power factor on wattmeter reading in two wattmeter method. Maximum Demand indicator			

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4	8(35-42)	Measurement of Electric Energy	<p>Single and three phase electronic energy meter: Constructional features and working principle, Errors and their compensations.</p> <p>Calibration of single phase electronic energy meter using direct loading.</p>			
5	14(43-56)	Circuit Parameter Measurement, CRO and Other Meters	<p>Measurement of resistance: Low resistance: Kelvin's double bridge, Medium Resistance: Voltmeter and ammeter method, High resistance: Megger and Ohm meter: Series and shunt Measurement of inductance using Anderson Bridge (no derivation and phasor diagram), Measurement of capacitance using Schering bridge (no derivation and phasor diagram)</p> <p>Single beam/single trace CRO, Digital storage Oscilloscope: Basic block diagram, working, Cathode ray tube, electrostatic deflection, vertical amplifier, time base generator, horizontal amplifier, measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, specifications.</p> <p>Other meters: Earth tester, Digital Multi-meter; L-C-R meter, Frequency meter (ferromagnetic and Weston type), Phase sequence indicator, power factor meter (single phase and three phase dynamometer type), Synchroscope, Tri-vector meter, Signal generator need, working and basic block diagram. Function generator: need, working and basic block diagram, function of symmetry.</p>			

APPROVED	SIGN HOD/OIC
DATE -----	

8.8.23