



STANLEY
COLLEGE OF ENGINEERING & TECHNOLOGY FOR WOMEN
(Approved by AICTE, New Delhi | Affiliated to Osmania University, Hyderabad)
Address : Chapel Road, Abids, Hyderabad

EE 458

ELECTRONIC INSTRUMENTATION SYSTEMS

(Elective -III)

UNIT-I

Analog and Digital Measuring Systems: Interfacing Active and Passive Transducers.

Amplifiers: Instrumentation amplifiers (Fixed and Programmable gain types and its specifications), Isolation amplifiers (Types and its specifications).

Digital to Analog Converters: R-2R ladder and Inverted ladder DACs. Main DAC specifications. Analog to Digital Converter: R-2R Ladder and Inverted Ladder DACs,

Main DAC specifications, Analog to Digital Converters: Parallel (or Flash) ADC successive approximation, ADC Microprocessor compatibility, Dual slope ADC, Principal specifications of an ADC.

UNIT-II

Digital Voltmeters and Multimeters: Simple D.C Voltage attenuator, Current to Voltage converter, Resistance to Voltage Converter, Automatic ranging and Automatic

zeroing RMS detector in DMM and RMS and True RMS, Digital Frequency and Time

measurements, Frequency Measurements, frequency ratio Time Interval and Pulse width

measurements, Scaling and Checking modes. Counting errors, Input signal conditioning,

Trigger level, Hysteresis.

UNIT-III

Signal Analysis: Wave Analyzers: Signal analysis and wave Analyzer: Type and Applications. Harmonic Distortion Analyzers: harmonic Distortion, heterodyne harmonic

Analyzer or Wave meter, Tuned circuit, Fundamental Suppression. Spectrum Analysis:

Block Diagram, Phase locked circuit for the local oscillator, Successive Limiting type of

Log IF amplifier.

UNIT-IV

Computer Controlled Test Systems: using an Audio amplifier, Radio Receiver instruments used in computer controlled instrumentation, Frequency counter, Synthesized

signal generator interfaced with IEEE 488 Bus, Relay switched attenuator, IEEE 488

Electrical Interface.

UNIT-V

Cathode ray Oscilloscope: Block Diagram, Basic Concepts, Vertical amplifier, Time

Base, Trigger Delay line and their role in a CRO, Digital storage Oscilloscope, Magnetic

Re orders, Digital Interface for Programmable Instrumentation, Description and Sample

examples of Automatic Instrumentation.

Suggested Reading:

1 A.J .Owens, Digital Instrumentation, McGraw Hill International Edition, 1995

2 H.S.Kalsi, Electronic Instrumentation, Tata McGraw Hill

3 Halftrack and Copper, Modern electronic Instrumentation and Measurement Techniques, Prentic Hall ofIndia, 2002.

4 Tran Tien Lang, Electronic Measuring Systems, John Wiley and Sons, 1987.