

Unit I

Electronic Instrument Systems

Standards of Measurement of Mass, Length, Volume, Time and Frequency, Electrical Standards, Standards of Temperature and Luminous Intensity, IEEE standards, Engineering Analysis of instrument Systems, Experimental Errors, Minimization of Errors, Frequency Response and Calibration of instruments systems.

[4]

Transducers

Classification: Displacement, Resistive, Capacitive, Inductive, Piezo-Electric, piezo-Resistive and Photo-Electric Transducers, Crystal Oscillator, Semiconductor Transducers.

[4]

Unit II

Bridge Measurements

Wheatstone Bridge, Kelvin Bridge, Guarded Wheatstone Bridge, AC Bridges: Maxwell Bridge, Hay Bridge, Schering Bridge, Wien Bridge.

[3]

High Frequency Measurements

Problems in High Frequency Measurement, RF Power and Voltage Measurements, RF Impedance Measurement, Q Meter, Digital Voltmeter, Time, Frequency and Phase Measurements, Measurement on CRO, Group Delay Measurement, Digital Storage Oscilloscope.

[5]

Unit III

Measurement of Non Electrical Quantities

Measurement of Temperature: Resistance Thermometer, Thermocouple, IC Sensor, Radiation Method (Pyrometer).

[3]

Measurements of Pressure, Fluid Flow, Force, Torque, Displacement, Velocity and Acceleration.

[4]

Unit IV

Measurement of Amplifier and Receiver Characteristics, Data Distribution and Bus Structure, RS-232, IEEE488 Interface, PC Based Acquisition System, Data Transmission, D to A and A to D convertors, pulse Modulation Techniques.

[5]

Telemetry, Tracking and Command.

[3]

Unit V

Signal Generation

Frequency Synthesized Signal Generator, Frequency Divider Generator, Signal Generation Modulation, Sweep Frequency Generator, Pulse and Square wave Generators, Function Generator.

[3]

Display Devices, Signal Analyzer, wave Analyzer, Harmonic Distortion Analyzer, Spectrum Analyzer.

[3]

Microprocessor Based Instrumentation, Computer Controlled Test System, Fiber Optic Measurements.

[3]

Books:

1. Helric & Cooper/ "Modern Electronic Instrumentation & Measurement Techniques"/ PHI
2. E.O. Doebelin/ "Measurement Systems"/ MC Graw Hill
3. Oliver & J.M. Cage/ "Electronic Measurement And Instrumentation"/ MC Graw Hill.
4. Ranjan C.S./ "Instrumentation Devices & Systems" / Tata MC Graw Hill.