Subject Code : SIH

PAPER – VIII – INSTRUMENTATION AND CONTROL.

Unit – I: Transducers.

Classification of transducers – Selecting a transducer – Strain gauges – Displacement transducers – Temperature measurements – Thermistor Characteristics – Thermistor applications.

Unit – II: Electronic Instruments for measuring basic Parameters.

Amplified DC meter – AC voltmeter using rectifiers – Electronic multimeter – Digital voltmeters – Q meter – Basic Q meter circuit – Measurement methods – Source of error.

Unit –III: Display instruments

Oscilloscope – Principle of operation, General purpose oscilloscope – Triggered and Sweep Oscilloscopes – Storage oscilloscope – Oscillographs and X-Y recorders.

Unit – IV: Generating Instruments.

Audio oscillators – RF Signal generators – Sweep Frequency generators – Pulse generators – Simple frequency counter.

UNIT – V - D/A and A/D Converters.

Necessity for D/A and A/D conversion – Principle of operation of various types of D/A converters – Resolution – Linearity offset – Setting time – Stability – D/A conversion with magnitude and sign – Principle of operation of various types of A/D converters – Successive approximation – Counter method – Single and Dual Slope integration – Voltage A/D and D/A converters.

Books for study

1. Modern Electronic instrumentation and Measurement Techniques – A.D. Helfrick and W.D. Cooper – Prentice Hall India – 1992
2. Digital principles and applications – Malvino and Leach Tata McGraw Hill.

Books for reference

1. Instruments and Measurements of Electronics – Clyde N. Merrick – McGraw Hill
2. Electronics for Scientists and Engineers – Ralph Bendict
3. Principles of Electronics instrumentation Paper - A Desa – E Amold – 1981.