Sensors and Transducers

Unit I [16 T]

Transducers: Definition, Principle of sensing & transduction, Classification, Characteristics of transducers.
Resistance Transducer: Basic principle – Potentiometer –Loading effects, Resistance strain gauge– Types.
Inductance Transducer: - Basic principle – Linear variable differential transformer –types.
Capacitance Transducer: Basic principle- transducers using change in area of plates – distance between plates- variation of dielectric constants –Types

Unit II [16 T]

Thermal sensors: Resistance change type: RTD - materials, types, working principle, Thermistor - materials, working principle, Thermo emf sensors: Thermocouple – Principle and types, IR Radiation sensors: Principle and types

Unit III [16 T]

Pressure Transducers: basic principle- different types of manometers-u tube manometer-well type manometers.
Level transducer-continuous level measurement-discrete level measurement-mass –capacitive level gauges

Unit IV [16 T]

Flow Transducers: Bernoulli's principle and continuity, Orifice plate, nozzle plate, venture tube, Rotameter, anemometers, electromagnetic flow meter.

Radiation sensors: LDR, Photovoltaic cells, photodiodes, photo emissive cell types
Sound Transducers: Sound level meter, Microphone.
Hall Effect transducers.