MODULE 1

MODULE 2

MODULE 3

3.1 Significance of Mechanical Measurements, Classification of measuring instruments, generalized measurement system, types of inputs : Desired, interfering and modifying inputs.

3.2 Static characteristics : Static calibration, Linearity, Static Sensitivity, Accuracy, Static error, Precision, Reproducibility, Threshold, Resolution, Hysteresis, Drift, Span and Range etc.

MODULE 4

4.1 Displacement Measurement : Transducers for displacement, displacement measurement, potentiometer, LVDT, Capacitance Types, Digital Transducers (optical encoder) , Nozzle Flapper Transducer.

4.2 Strain Measurement : Theory of Strain Gauges, gauge factor, temperature Compensation, Bridge circuit, orientation of strain gauges for force and torque, Strain gauge based load cells and torque sensors.

4.3 **Pressure Measurement** : Elastic pressure transducers viz. Bourdon tubes, diaphragm, bellows and piezoelectric pressure sensors, High Pressure Measurements, Bridgeman gauge. Vacuum measurement : Vacuum gauges viz. McLeod gauge, Ionization and Thermal Conductivity gauges.

4.4 **Flow Measurement :** Bernoullis flowmeters, Ultrasonic Flowmeter, Magnetic flow meter, rotameter.

4.5 **Temperature Measurement :** Electrical methods of temperature measurement Resistance thermometers, thermistors and thermocouples, Pyrometers.

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