

# AMICE22 TRANSDUCERS AND INDUSTRIAL INSTRUMENTATION

## UNIT-1 MEASUREMENT OF TEMPERATURE

- 1.1 Temperature scale- primary and secondary standards for calibration
- 1.2 Different types of filled system thermometers- installation maintenance, source of errors
- 1.3 Bimetallic thermometers- installation maintenance, source of errors
- 1.4 Bimetallic thermometer- thermocouples- materials- construction characteristics and circuits.

## UNIT-2 RESISTANCE THERMOMETER

- 2.1 Temperature coefficient of resistance- RTD- material, construction and characteristic-measuring circuits
- 2.2 Three wire and four wire method- response- thermistors- semiconductor and IC sensors.

## UNIT-3 MEASUREMENT OF PRESSURE

- 3.5 Units of pressure- pressure standards- various types of manometers- elastic type pressure standards- various types of manometers- elastic type pressure gauges
- 3.6 Material, construction and calibration- pressure gauges using strain gauge, capacitive, inductive and piezoelectric transducer- measurement of low pressure
- 3.7 McLeod gauge- thermal conductivity gauge- thermocouple gauges
- 3.8 Ionization gauges – solid state pressure transducers

## UNIT-4 LEVEL MEASUREMENT

- 4.1 Float activated devices- displacer devices- torque tube purge systems
- 4.2 Diaphragm box type, manometer type- boiler drum level measurement- differential pressure method
- 4.3 Hydra step method- resistance, capacitive, nucleonic and ultrasonic type level gauges- solid level measurement- gamma ray absorption method- weighing method
- 4.4 Capacitive type- diaphragm method- rotating paddle and stack detector.

## UNIT-5 MEASUREMENT OF SPEED

- 5.1 Mechanical- electrical- electronic methods- stroboscopic method
- 5.2 Measurement of acceleration- various types- calibration.

### Reference Books:

3. E.O.Deoblin – Measurement Systems – Applications and Design – McGraw Hill
4. C.S.Rangan,G.R.Sharma and V.S.V Mani – Instrumentation Devices and Systems – Tata McGraw Hill
5. D.P.Eckman – Industrial Instrumentation – Wiley Eastern