

# AMEE22 ELECTRICAL INSTRUMENTATION & PROCESS CONTROL

## UNIT-1 TRANSDUCER-I

- 1.1 Definition,
- 1.2 Advantages of electrical transducers, classification,
- 1.3 Characteristics, factors affecting the choice of transducers,
- 1.4 Potentiometers, Strain gauges, Resistance thermometer, Thermistors,
- 1.5 Thermocouples, LVDT, RVDT

## UNIT-2 TRANSDUCER-II

- 2.1 Capacitive,
- 2.2 Piezoelectric Hall effect and opto-electronic transducers.
- 2.3 Measurement of Motion, Force pressure,
- 2.4 Temperature, flow and liquid level.

## UNIT-3 TELEMETRY

- 3.1 General telemetry system, land line & radio frequency telemetering system,
- 3.2 Transmission channels and media, receiver & transmitter. Data
- 3.3 Acquisition System: Analog data acquisition system,
- 3.4 Digital data acquisition system,
- 3.5 Modern digital data acquisition system.

## UNIT-4 DISPLAY DEVICES AND RECORDERS

- 4.1 Display devices, storage oscilloscope,
- 4.2 Spectrum analyzer, strip chart & x-y recorders,
- 4.3 Magnetic tape & digital tape recorders.
- 4.4 Recent Developments: Computer aided measurements,
- 4.5 Fibre optic transducers, microprocessors, smart sensors, smart transmitters.

## UNIT-5 PROCESS CONTROL

- 5.1 Principle, elements of process control system,
- 5.2 Process characteristics,
- 5.3 Proportional (P), integral (I), Derivative (D), PI, PD and PID control modes.
- 5.4 Electronic, Pneumatic & digital controllers.

### Reference Books:

1. E.O. Decblin, "Measurement System- Application & design", McGraw Hill.
2. W.D. Cooper and A. P. Beltried, "Electronics Instrumentation and Measurement Techniques" Prentice Hall International
3. Rajendra Prasad, "Electronic Measurement and Instrumentation Khanna Publisher M.M. S. Anand, "Electronic Instruments and Instrumentation Technology" PHI International.