Instrumentation and Power Lab (304214)

Teaching Scheme:
Practicals 4Hrs/Week

Examination Scheme:
PR:50 Marks
TW: 50 Marks

Instrumentation

List of Experiments : (Any 8 experiments)

1. Weight measurement using load cell and strain gauges.
2. Measurement of vibration.
3. Liquid level measurement(Capacitance probe/ Ultrasonic/Hydrostatic-any one technique)
4. Flow measurement with orifice plate and differential pressure transmitter (DPT).
5. Measurement of speed of rotation of shaft using optical incremental encoder.
6. Temperature measurement. (RTD signal conditioning with bridge circuit, instrumentation amplifier, ADC and microcontroller)
7. Simulation of temperature measurement experiment with anysoftware's (RTD signal conditioning with bridge circuit, instrumentation amplifier, ADC and microcontroller)
8. Determine RTD characteristic and find the sensitivity PT 100/500
9. Determine thermistor or Thermocouplecharacteristic and find its sensitivity.
10. Design of signal converters using Electronics/electro-mechanical components (any one out of V/I, I/V, I/P, P/I)
11. Pneumatic cylinder sequencing with simple logic.
12. Data acquisition and analysis using PC.
13. Study of various switches
14. Study of different valves and their characteristics.
15. Study of characteristics of valves

Power Electronics

List of Experiments:

1. Single phase Semi / Full Converter with R & R-L load
2. Three phase Semi / Full Converter with R load
3. Single phase AC voltage controller using SCRs for R load
4. Single-Phase PWM bridge inverter for R load
5. Three-Phase inverter for R load
6. Step down dc chopper using power MOSFET / IGBT
7. Resonant converter
8. Load & line regulation of SMPS
9. Simulation of any two quadrant chopper circuit
10. Simulation of PWM inverter
11. Case study of any one of the following: HVDC transmission system, Photovoltaic System, Wind generator system