

Question Bank

1. What is an order of a system? Derive an equation for dynamic response for 1st order system for step and ramp input. Draw the respective output responses? (10)
2. What are the various types of errors encountered in instrumentation system. Give possible remedies to prevent these errors from affecting the system? (10)
3. Explain various static and dynamic characteristics of instruments? (10)
4. Classify transducers, give the requirements for selection of transducer and state the advantages of electrical transducer? (10)
5. Explain the principle of strain gauge. What are the different types of strain gauges. Also derive the expression for gauge factor for strain gauge and explain piezo-resistive effect? (10)
6. Explain capacitive transducer for linear and angular displacement. Derive its output expression. Also comment on sensitivity for each case? (10)
7. What are the various pressure sensing elements? Draw and explain all of them? (10)
8. Describe any two instruments with neat sketches that measure differential pressure in flow measurement? (10)
9. Explain the principle, construction, working, advantages, disadvantages and application of LVDT with neat sketches? Explain the role of phase sensitive demodulator?
10. Explain the types, construction, working principles and operation of ultrasonic flow meters with neat sketches? (10)
11. Explain any one method of temperature measurement. Draw the diagram, explain operating principle, construction, advantages and disadvantages of the selected transducer? (10)
12. Describe an operating principle of dew point instrument used to measure moisture and humidity in gases, with neat sketches? (10)
13. Write short note on: (10)
 - a) pH measurement
 - b) Viscosity measurement
 - c) Torque measurement
 - d) Types of thermocouple