

Date of assignment - 10/09/24

Assignment Questions - 1 Due Date: - 20/09/24

| Q. No. | Questions                                                               |
|--------|-------------------------------------------------------------------------|
| 1.     | What is need of an instrumentation system?                              |
| 2.     | Explain the generalized block diagram of instrumentation system?        |
| 3.     | Explain the static & dynamic characteristics of instrumentation system? |

Date  $\rightarrow$  28/09/24

Due Date  $\rightarrow$  12/10/24

### Assignment Questions - 2

Q. No.

Questions

- ① Can we use transformers in DC applications?
- ② Explain the Construction & working principle of LVDT with the help of a neat diagram? Also write its advantages & disadvantages.
- ③ Discuss the Constructional details, working principle and applications of strain gauge. Also, prove  $(G_f = 1 + 2\nu)$
- ④ Discuss the Constructional details, working principle and application of:
  - ① RTD.
  - ② Thermocouple.
  - ③ Piezoelectric Transducer.
  - ④ Thermistor.
  - ⑤ Bourdon Tube.
- ⑤ Explain different types of Transducers 2.
- ⑥ Differentiate between active & passive Transducer.
- ⑦ Explain capacitive, resistive and inductive transducers?

# Assignment Questions - 3

Q. No.

Questions

- ① Explain the purpose and elements of Signal Conditioning? (5)
- ② Explain in brief 741 Operational Amplifier. Write down the properties of ideal op-amp? (5)
- ③ Write down the various applications of Instrumentation Amplifier. (5)
- ④ Discuss the data Transmission system and its advantages and Disadvantages. (5)
- ⑤ Explain any three of the following:- (15)
  - a) Instrumentation Amplifier
  - b) Sample and hold system.
  - c) A/D & D/A Conversion
  - d) Multiplexing & Demultiplexing.
- ⑥ Explain Time Division Multiplexing with Suitable diagram. (8)

8) What is Op-Amp & Explain Inverting & Non-Inverting mode of an operational Amplifier? (8)

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## UNIT-4

### Assignment Questions - 4

| Q. No. | Questions                                                                                             |   |
|--------|-------------------------------------------------------------------------------------------------------|---|
| ①      | Explain the measurement of pressure using strain gauge.                                               | ⑤ |
| ②      | Explain the measurement of pH.                                                                        | ⑤ |
| ③      | Explain the measurement of position, object detection using proximity transducer.                     | ⑤ |
| ④      | Explain the measurement of distance, water level, and obstacle detection using ultrasonic transducer? | ⑤ |
| ⑤      | Explain the method of measurement of pressure using capacitive transducer?                            | ⑦ |
| ⑥      | Explain any method of measurement of pressure using capacitance Humidity                              | ⑦ |
| ⑦      | Explain the measurement of pressure using strain gauge.                                               |   |

8) Define pH value. Explain pH meter with diagram? (7)

9) Explain temp. measurement using pyrometers? (7)

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# Unit-5

## Assignment Questions - 5

| Q. No. | Questions                                                                                                           |   |
|--------|---------------------------------------------------------------------------------------------------------------------|---|
| ①      | Define Control System and write down the classification of Control System?                                          | ⑤ |
| ②      | Write down the difference between open loop and closed loop control system?                                         | ⑤ |
| ③      | Define transfer function of a control system. Also explain poles and zeroes of transfer function.                   | ⑤ |
| ④      | Explain the basic concept of control actions of proportional (P), Integral (I) Differential (D) and PID Controller? | ⑤ |
| ⑤      | Explain about any two of the following :- ① PID Controller ② Transfer function ③ Actuator Controller.               | ⑩ |

⑥ Define Various technology used in feedback control system with neat diagram

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