

**Total No. of Pages : 02**

**Total No. of Questions : 09**

**(Sem.-4)**

## TRANSDUCERS AND SIGNAL CONDITIONING

**Subject Code : BTEEE-402**

**Paper ID : [72386]**

**Time : 3 Hrs.**

**Max. Marks : 60**

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

## SECTION-A

- 1. Answer briefly :**
- Define transducer and discuss its need.
  - Compare analog and digital transducers.
  - What do you mean by humidity? Explain.
  - What do you mean by band width? Explain.
  - List the advantages of instrumentation amplifier.
  - Compare LED and LCD.
  - Why signal conditioning of the inputs is required? Explain.
  - Discuss the need of S/H circuit in data acquisition.
  - What are the advantages of magnetic tape recorders? Explain.
  - List the advantages and disadvantages of ramp type digital voltmeter.

### SECTION-B

2. List the various transducers used for the measurement of linear velocity. Explain any one of these.
3. Derive the expression for the closed loop gain of an operational amplifier used in the inverting and non-inverting modes. Describe the assumption made, if any.
4. Why multiplexing is required in data transmission? Explain frequency division multiplexing and its characteristics as applied to telemetry
5. Explain the functioning of a Potentiometric type digital voltmeter. Support your answer with waveforms, if required.
6. Explain in detail dual slope integration type analog to digital converter.

### SECTION-C

7. Explain in detail the principles of following transducers :
  - a. Resistive
  - b. Inductive
  - c. Piezoelectric
  - d. Photovoltaic
  - e. Hall effect
8.
  - a. What is the need of data acquisition system? Explain multi-channel data acquisition system in detail.
  - b. Describe the basic components of a magnetic type recorder used for instrumentation application using direct recording techniques.
9. Explain the following :
  - a. Time Division Multiplexing
  - b. OPAMP function as
    - a) an integrator
    - b) an Adder