TED (15/19) 3214
(Revision-2015/19)

**1503240117**

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# DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2024

## INSTRUMENT TRANSDUCERS

[Maximum marks: 100] [Time: 3 Hours]

### PART – A
**Maximum marks: 10**

**I.** (Answer ***all*** the questions in one or two sentences. Each question carries **2** marks)

1. Define transducer.
2. List any two advantages of LVDT.
3. Define Villari effect.
4. State photoelectric effect.
5. List any two applications of radiation detectors. (5 x 2 = 10)

### PART – B
**Maximum marks: 30**

**II.** (Answer any ***five*** of the following questions. Each question carries **6** marks)

1. Explain the construction and working of Rotary potentiometer.
2. Explain the working of search coils.
3. Explain about a Variable reluctance transducer.
4. Describe the principle of Variable capacitive transducer.
5. Describe the equivalent circuit of a piezoelectric transducer.
6. Draw the block diagram of a smart sensor.
7. Explain the working of ultrasonic sensor. (5 x 6= 30)

### PART – C
**Maximum marks: 60**

(Answer ***one full*** question from each unit**.** Each full question carries **15** marks)

#### UNIT – I

**III**. (a) Draw a neat sketch of Linear potentiometer and derive its sensitivity. (9)

(b) Explain strain gauge bridge circuit. (6)

**OR**

**IV**. (a) Derive the expression for gauge factor of a strain gauge. (10)

(b) Draw the schematic diagram of semiconductor strain gauge. (5)

**UNIT - II**

**V**. (a) Explain construction and working of Linear Variable Differential Transformer (LVDT). (9)

(b) Draw a neat diagram of eddy current type inductive transducer. (6)

**OR**

**VI**. (a) Explain the application of Hall effect transducer for current measurement. (7)

(b) Explain the operation of pressure measurement using LVDT. (8)

**UNIT - III**

**VII**. (a) Explain variable dielectric type capacitive transducer. (8)

(b) Describe the principle of operation of Photovoltaic cell. (7)

**OR**

**VIII**. (a) Explain acceleration measurement by using piezoelectric transducer. (7)

(b) Explain the working of Photoconductive cell. (8)

**UNIT – IV**

**IX**. (a) Explain the working of Scintillation counter. (7)

(b) Explain the working of capacitive proximity sensors. (8)

**OR**

**X**. (a) Write a short note on LM35 temperature sensor. (7)

(b) Describe working of Geiger Muller Counter with a diagram. (8)

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