

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER - 2023**

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. Explain the principle of variable inductance transducer.
3. Define piezo electric effect.
4. Explain the working principle of Ultrasonic transducers.
5. Define photoelectric effect.

(5 x 2 = 10)

PART – B

Maximum marks: 30

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

1. Differentiate between sensors and transducers.
2. Illustrate the working principle of Smart sensors and smart transmitters.
3. Explain the operation of magneto resistive transducer.
4. Describe the principle of operation of solar cells.
5. Explain the construction and operation of gieger muller counter.
6. State the advantages and disadvantages of semiconductor strain gauages.
7. Explain the working of search coils.

(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) Explain the working of linear and rotary potentiometer. (10)
- (b) Explain strain gauge bridge circuit. (5)

OR

- IV.** (a) Explain primary and secondary transducers with the help of an example. (10)
(b) Explain the working of strain gauge. (5)

UNIT-II

- V.** Explain the working of LVDT along with its characteristics. (15)

OR

- VI.** (a) Explain the working of hall effect transducer. (9)
(b) Explain any one application of hall effect transducer. (6)

UNIT-III

- VII.** (a) Explain any one application of piezoelectric crystal. (8)
(b) Explain the working of Photoconductive cell. (7)

OR

- VIII.** (a) Derive the expression for output voltage of a piezoelectric crystal. (10)
(b) Explain the working of Photomultiplier tube. (5)

UNIT-IV

- IX.** (a) Explain any one application of Ultrasonic transducer. (10)
(b) Explain the working of scintillation counter. (5)

OR

- X.** (a) Explain working of capacitive proximity sensors. (8)
(b) Explain the working of inductive proximity sensors. (7)
