

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2021**

INSTRUMENT TRANSDUCERS

[Maximum Marks: 75]

[Time: 2.15 Hours]

PART-A

(Answer any three questions in one or two sentences. Each question carries 2 marks)

I.

1. Write the working principle of strain gauge transducer.
2. Explain the villari effect.
3. List out any two applications of photo electric transducers.
4. What is a smart sensor?
5. What is a Nanosensor? (3×2=6)

PART-B

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

II.

1. With a neat figure describe the primary and secondary transducers used for pressure measurement application.
2. Describe the loading effect of potentiometer.
3. Describe the method for measurement of weight using LVDT.
4. Explain how we can employ a capacitive transducer for differential pressure measurement.
5. With neat diagram explain the method of acceleration measurement by using piezoelectric transducer.
6. List the applications of radiation detectors.
7. What are the difference between inductive proximity sensor and capacitive proximity sensor? (4×6=24)

PART-C

(Answer *any of the three units* from the following. Each full question carries 15 marks)

UNIT-I

- III. (a) List the advantages and disadvantages of semiconductor strain gauge. (7)
(b) With appropriate figure, explain the construction and working of rotary potentiometer. (8)

OR

- IV. (a) With a neat figure describe semiconductor strain gauge. (7)
(b) Explain mechanical and electrical transducer and give two examples for each. (8)

UNIT – II

- V. (a) With necessary figures describe the construction and operation of LVDT. (9)
(b) What is magneto resistive transducer and explain its principle of operation. (6)

OR

- VI. (a) Describe the principle of operation of Hall effect transducer. (8)
(b) Explain about eddy current type inductive transducer. (7)

UNIT – III

- VII. (a) With necessary figures, explain the variable area capacitive transducer. (8)
(b) Describe the construction and operation of photo emissive cell with necessary figure. (7)

OR

- VIII. (a) Explain the principle of operation of piezoelectric transducer with neat sketch. (8)
(b) Describe the working principle of photo multiplier tube. (7)

UNIT – IV

- IX. (a) Discuss the features of any two IC type temperature sensors. (8)
(b) Explain the construction and working of scintillation counter. (7)

OR

- X. (a) With neat schematic diagram, describe the construction and operation of ionization chamber. (8)
(b) Explain the principle of operation of ultrasonic transducer. (7)
