TED (10)–3076

(REVISION—2010)

Reg. No. .....

Signature .....

THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—MARCH, 2014

INSTRUMENT TRANSDUCERS

(Common for EI and IT)

[*Time* : 3 hours

(Maximum marks : 100)

PART—A

(Maximum marks : 10)

Marks

I Answer all questions in one or two sentences. Each question carries 2 marks.

1. Define Hook's Law.
2. List two Self generating Transducers.
3. State the term Magneto-Resistance.
4. List two Piezo Electric materials.
5. Define the term LDR. (5×2=10)

PART—B

(Maximum marks : 30)

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

1. Explain Active Transducer with example.
2. A Strain Gauge is bonded to a beam 0.1 m long and has a cross sectional area 4 cm^2 with the gauge has an unstrained resistance of 240Ω and gauge factor of 2.2. When load is applied, the resistance of gauge changes to 0.013Ω. Calculate the change in length of beam.
3. List the disadvantages of LVDT.
4. Explain measurement of current using Hall Effect Transducer.
5. Explain the working of Capacitive Transducer using Cantilever Spring Plate.
6. Draw and explain equivalent circuit of Piezo Electric Transducer.
7. Explain the operation of Solid State Radiation Detector. (5×6=30)

Marks

PART—C

(Maximum marks : 60)

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

UNIT—I

III (a) Derive the expression 'Gf = 1+2v' for Strain Gauge. 8

(b) Explain the principle and operation of Linear and Rotary Potentiometer. 7

OR

IV (a) Explain Bonded and Unbonded Strain Gauges with diagram. 8

(b) List the advantages and disadvantages of Semiconductor Strain Gauge. 5

(c) Differentiate Sensor and Transducer. 2

UNIT—II

V (a) Explain the construction and working of LVDT. 8

(b) Describe the working of Magneto Resistive Bismuth Transducer. 7

OR

VI (a) Explain the principle and operation of Hall Effect Transducer. 8

(b) Explain the working of Variable Reluctance Inductive Transducer. 7

UNIT—III

VII (a) Explain the working of Capacitive Transducer using change in area of Plates. 8

(b) Describe the working of Piezo Electric Accelerometer. 7

OR

VIII (a) Explain the working of Capacitive Transducer for Level measurement. 8

(b) Describe the working of Piezo Electric Pressure Transducer. 7

UNIT—IV

IX (a) Describe the principle and operation of Photo Emissive Cell. 8

(b) Explain the working of Scintillation Counter. 7

OR

X (a) Describe the working of Photo Conductive Cell Relay Control Circuit. 8

(b) Explain the working of Geiger Muller Tube. 7
