

Roll No.

Total Pages : 2

Exam. Code

6038

8923

BT-8/M-11

TRANSDUCERS AND THEIR APPLICATIONS

Paper : ECE-430(E)

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt five questions in all, selecting at least one question from each unit. All questions carry equal marks.

UNIT-I

1. (a) (i) What are the advantages of an electrical signal ?
(ii) Give basic requirements of a transducer.
(iii) Explain with an example primary and secondary transducer. 15
(b) Explain resistive transducers to sense linear and angular displacement. 5
2. (a) What is Piezo-electric effect ? Explain a piezo-electric crystal for the measurement of force. Also deduce a relation for charge sensitivity. 10
(b) What is Hall effect ? Give arrangements to measure displacement and current using Hall effect. 10

UNIT-II

3. (a) Explain an industrial Platinum resistance thermometer. 5

- (b) Explain construction of thermistors. Give an arrangement for the measurement of temperature using thermistor and bridge circuit for higher sensitivities. 15

4. (a) Explain Dual-fluid U-tube manometer. Also derive an expression for deflection amplification. 10
(b) (i) Describe any five force summing devices. 5
(ii) Total radiation pyrometer. 5

UNIT-III

5. (a) Explain an LVDT with its advantages and disadvantages. 10
(b) Describe a capacitive transducer and its associated bridge circuit for measurement. 10
6. (a) Describe different types of strain-gauges and explain a strain-gauge load cell. 10
(b) Explain variation of dielectric constant for measurement of displacement. <http://www.kuonline.in> 10

UNIT-IV

7. (a) Explain an Inductive torque transducer. 10
(b) Describe a general purpose Electric dynamometer. 10
8. (a) Explain an LVDT type force transducer. 10
(b) Write short notes on any three of the following :
(i) Toothed rotor tachometer generator.
(ii) AC tachogenerator.
(iii) RVDT.
(iv) Thermocouple. 10