

Roll No.

Total Pages : 03

BT-8/M-14

8818

TRANSDUCER AND THEIR APPLICATIONS

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. Assume missing data, if any.

Section I

1. Differentiate between electrical and mechanical transducers. Give the examples of mechanical transducers. Give the merits and drawbacks of mechanical transducers. What are active and passive transducers ?
2. Discuss in brief the various types of Inductive transducers and name at least *one* application of each.

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Section II

3. Define force constant, pressure constant and effective area of an elastic pressure diaphragm. How are these parameters obtained in practice ?
4. What physical law governs the operation of a total radiation pyrometer ? What are commonly used radiation detectors ? Compare their performance in a table. What is the basic difference between the optical pyrometer and the total radiation pyrometer ?

Section III

5. How is the parallel plate capacitor type displacement transducer used in a system to show an output voltage proportional to the displacement ? Draw the scheme and analysis.
6. Describe with diagram the moving magnet type transducer used for measuring linear velocity. Give its advantages and limitations too.

Section IV

7. Compare three types of strain gauges. Give their merits and demerits. How does the temperature affect the operating characteristics of strain gauges ? Under what condition dummy strain gauge is used ? Give the function of this gauge used.
8. How is a variable reluctance transducer used for displacement measurement and adapted for torque and acceleration measurement ? Discuss with suitable diagrams.

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