

Total No. of printed pages = 3

CAI-602/Transducer & SC/6th Sem/2014/N

**TRANSDUCER AND SIGNAL
CONDITIONING**

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks
for the questions.

Answer any *five* questions.

1. (a) What is strain gauge ? Derive the expression for gauge factor in bonded resistance wire strain gauge. 10
- (b) Distinguish between transducer and sensor. 4
2. (a) Explain any two methods for measuring temperature and give its advantages and limitations. 12

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- (b) A strain gauge (resistance) with a gauge factor 4 is cemented to a steel member which is subjected to a strain of 1.2×10^{-6} . If the original resistance value of the gauge is 130Ω , calculate the change in resistance. 2
3. (a) What is construction and principle of operation for LVDT and carbon microphone ? 10
- (b) Explain the operating principle of capacitive transducer in differential arrangement. 4
4. Write short notes on the following : 14
- (a) Ultrasonic transducer
- (b) Sample-Hold circuit.
5. (a) Explain any one type of A/D converter with neat sketch. 7
- (b) What are the types in Tachogenerator ? Explain any one with its advantages and limitations. 7
6. Define the term piezoelectric effect. Derive the expression for change sensitivity of piezoelectric transducer. Give its application in measuring the different physical quantities. (any two). 14

7. Define the terms :

7×2=14

- (a) Transducer
- (b) Inverse transducer
- (c) Primary transducer
- (d) Secondary transducer
- (e) Active transducer
- (f) Passive transducer
- (g) Mechanical transducer.