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Question Paper Code: 31063

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

Third Semester

Instrumentation and Control Engineering

01UIC303 - SENSORS AND TRANSDUCERS

(Common to Electronics and Instrumentation Engineering)

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Define static calibration.
2. Differentiate between primary and secondary transducers.
3. Differentiate between resolution and threshold.
4. Write the Laplace transform of unit step, unit ramp and unit impulse inputs.
5. List the applications of inductive transducers.
6. Write the principle of capacitive transducers.
7. What are the advantages of fiber optic transducers?
8. Define magnetostriction.
9. State the features of smart sensors.
10. What are the advantages of nano sensors?

PART - B (5 x 16 = 80 Marks)

11. (a) Discuss in detail about statistical analysis of errors. (16)

Or

(b) (i) Explain in detail about fundamental units and standards of a measurement system. (10)

(ii) Write short note on selection procedure for transducer. (6)

12. (a) (i) Define the following terms: Accuracy, Precision, Hysteresis, Linearity, Range and Span. (10)

(ii) Derive an expression for step response of a first order transducer. (6)

Or

(b) What do you mean by standard test inputs? Derive an expression for step response of second order transducer in under damped condition. (16)

13. (a) Explain in detail about the construction and principle of operation of LVDT. State its applications. (16)

Or

(b) Describe with neat sketch, the construction and working of capacitor microphone. (16)

14. (a) Explain how angular displacement is measured using digital transducer? (16)

Or

(b) Describe in detail about any two application of Hall Effect transducers. (16)

15. (a) Discuss in detail about the characteristics of vibration sensor and give its applications. (16)

Or

(b) Explain in detail about the working principle of IC temperature sensor and write its features. (16)