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Question Paper Code: 31633

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Instrumentation and Control Engineering

01UIC303 – SENSOR 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 measurement.
2. What are the functional blocks of a measurement system?
3. Name the test signals used for analyzing dynamic system.
4. Define Resolution.
5. List the features of capacitive transducers.
6. Define gauge factor.
7. What is SQUID?
8. Define Hall effect.
9. What are the features of smart sensors?
10. Give some of the humidity sensing elements.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the factors considered for selection of transducer for a particular application. (16)

Or

(b) Discuss in detail about the types of errors. (16)

12. (a) Distinguish the following static characteristic of transducer

(i) Resolution Vs Thershold

(ii) Range Vs Span

(iii) Sensitivity Vs Zero drift

(iv) Accuracy Vs Precision. (16)

Or

(b) Draw and explain the output characteristics of a first order transducer with respect to ramp and step inputs. (16)

13. (a) Explain the constructional details and principle of operation of RTD with necessary diagram. Also give its advantages and disadvantages. (16)

Or

(b) (i) Discuss the principle and working of variable teluctance transducer. (8)

(ii) Explain the working of capacitive transducer. (8)

14. (a) Draw the equivalent circuit diagram of a piezo electric crystal and write the expression for the charge generated by the crystal. (16)

Or

(b) Discuss the working principle of fiber optic transducer with its application. (16)

15. (a) With a neat block diagram, explain about the functioning of a smart sensor. (16)

Or

(b) Explain the construction and working of humidity sensor and IC temperature sensor. (16)
