Reg. No. : | | | | | | | | | | |

Question Paper Code: 31363

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

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 is the different between active and passive transducer?
3. Name the test signals used for analyzing dynamic system.
4. How is accuracy of transducer specified?
5. What is the principle of potentiometer?
6. Define gauge factor.
7. What is SQUID?
8. What is piezoelectric effect?
9. What are the features of smart sensors?
10. Define manosensor.

PART - B (5 x 16 = 80 Marks)

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

Or

(b) The table given below lists of sample of experimental data

Value	4	7	5	3	11	8	10	6	2
Frequency of occurance	2	6	4	2	3	9	7	8	10

Calculate the arithmetic mean, mean deviation, standard deviation, the probable error of one reading, the standard deviation of mean, the probable error of mean and the standard deviation of standard deviation. (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) Derive the mathematical model of a second order transducer for a given impulse input. (16)

13. (a) (i) Explain the principle of operation and construction of potentiometer. (8)

(ii) Derive an expression for the gauge factor of strain gauge. (8)

Or

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

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

14. (a) (i) Explain the construction and working megnetostrictive transducer. (8)

(ii) Describe the principle of operation of hall effect transducer. (8)

Or

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

15. (a) Describe the operation and construction and application of vibration sensor. (16)

Or

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