

CBCS SCHEME

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21EE641

Sixth Semester B.E. Degree Examination, June/July 2024 Sensors and Transducers

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is a transducer? Explain also explain the classification of transducers based on electrical principle of working give at least two example for each class. (10 Marks)
b. Explain briefly the Hall effect transducers. (05 Marks)
c. List five advantages of electrical transducers. (05 Marks)

OR

- 2 a. Explain working of :
i) Variable reluctance type transducer
ii) Mutual inductance transducer with a neat diagram. (10 Marks)
b. Explain briefly the LVDT with a neat diagram. (05 Marks)
c. Mention the advantages and disadvantages of Piezo electric accelerometer. (05 Marks)

Module-2

- 3 a. Explain the working of semi-conductor strain gauge with advantages. (06 Marks)
b. Explain the working of a load cell. (07 Marks)
c. Write short notes on synchros and resolvers. (07 Marks)

OR

- 4 a. What are digital transducers? What are the advantages of them? (05 Marks)
b. Write short notes on selection of sensors. (05 Marks)
c. With a neat block diagram, describe the Micro Mechanical Systems [MEMS]. (10 Marks)

Module-3

- 5 a. Describe a general measurement system with a neat diagram and hence explain signal conditioning and necessity. (10 Marks)
b. Explain the objectives and configuration of Data Acquisition System (DAS). (10 Marks)

OR

- 6 a. Explain briefly for the following amplifiers :
i) Mechanical amplifiers
ii) Electrical and electronic amplifiers. (10 Marks)
b. Explain briefly the following :
i) Successive approximation A/D converter
ii) Flash A/D converter. (10 Marks)

Module-4

- 7 a. Explain the working a general telemetering system and how are telemetry system classified. (10 Marks)
b. Describe the construction and working of a Dead Weight Tester. (10 Marks)

OR

- 8 a. Define the terms data transmission and telemetry and state the advantage of current telemetering system. (10 Marks)
b. With a neat diagram, explain :
i) Hydraulic transmission
ii) Magnetic transmission. (10 Marks)

Module-5

- 9 a. Explain briefly the following expansion thermometers :
i) Liquid in glass thermometers (10 Marks)
ii) Bimetallic thermometers. (05 Marks)
b. Explain with a neat sketch the working of any electromagnetic flow meter. (05 Marks)
c. Write short notes on Piezo electric accelerometer.

OR

- 10 a. Define viscosity and explain any one methods for measuring viscosity. (10 Marks)
b. Write short notes on :
i) Capacitance type level gauge
ii) Write anemometers. (10 Marks)
