CBCS SCHEME

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18EE647

Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025
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. Explain laser interferometry as a method of strain measurement. Also mention the sensitivity of the method. **(07 Marks)**

b. With a neat diagram, explain the working of aneroid barometer principle. **(06 Marks)**

c. With a neat diagram explain
i) Pirani gauge
ii) Ionization gauge. **(07 Marks)**

OR

2 a. Briefly explain the components of precision electronic compass. **(07 Marks)**

b. With a neat diagram, explain a simple inductive sensor which is commonly used to sense distance in the range of millimeters to centimeters. **(07 Marks)**

c. Explain :
i) Drag cup method of measuring angular velocity.
ii) Rotary form of LVDT. **(06 Marks)**

Module-2

3 a. Briefly explain with a neat diagram:
i) Photo emissive cell
ii) Photo conductive cell. **(07 Marks)**

b. Write a short note on photo voltaic device. **(06 Marks)**

c. Explain light transducers with examples. **(07 Marks)**

OR

4 a. With relevant diagrams explain a current to light sensor or transducer. **(07 Marks)**

b. Briefly explain the construction and use of the vidicon and the CCD pick up devices with neat diagram. **(07 Marks)**

c. Write short notes on aerials used for transmission and receiving of electromagnetic waves. **(06 Marks)**

Module-3

5 a. Briefly explain bimetallic thermostat with a neat diagram. **(07 Marks)**

b. Write short notes on practical use of thermocouples. **(06 Marks)**

c. With neat circuit diagram, explain how resistance thermometers are used. **(07 Marks)**

OR

6 a. Explain PTC thermistors in detail. **(06 Marks)**

b. With a neat diagram explain typical pyroelectric passive infrared unit. **(07 Marks)**

c. Differentiate thermal transducers and thermal to electrical transducers. **(07 Marks)**

Module-4

7 a. Write a short note on the transducers which work on sound waves. **(06 Marks)**

b. Briefly explain the following with neat diagram:

i) Moving iron micro phone

ii) Moving coil micro phone. **(07 Marks)**

c. With the help of diagrams, explain different forms of capacitor microphones. **(07 Marks)**

OR

8 a. Explain telephone earpiece principle. How is it different from moving coil transducer? **(07 Marks)**

b. Write short notes on:

i) Ribbon loudspeakers

ii) Piezoelectric loudspeakers. **(06 Marks)**

c. Briefly explain transducers used for ultra sound waves and infrasound waves. **(07 Marks)**

Module-5

9 a. Briefly explain with neat diagrams :

i) Ultrasonic proximity detectors

ii) Optical proximity detectors. **(07 Marks)**

b. With neat diagrams, explain flow monitoring transducers for liquids. **(07 Marks)**

c. Explain briefly the different gas sensors used. **(06 Marks)**

OR

10 a. Briefly explain the different humidity sensors which are used. **(07 Marks)**

b. Write short notes on:

i) Smoke sensors

ii) Nightfall detectors **(06 Marks)**

c. Explain various types of smoke and fire detectors and their servicing. **(07 Marks)**

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