CBCS SCHEME

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18EE732

Seventh Semester B.E. Degree Examination, July/August 2022
Micro – and Nano-Scale 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 the structure of capacitive pressure sensor with the help of neat diagram. **(10 Marks)**

b. Explain the principle of operation and theoretical description of capacitive pressure sensors. **(10 Marks)**

OR

2 a. Explain the structure of inductive pressure sensors with the help of a neat sketch. **(10 Marks)**

b. Explain the principle of operation of ultrahigh sensitivity pressure sensors with the help of relevant equations. **(10 Marks)**

Module-2

3 a. Explain the principle of operation of latest acceleration sensor with the help of neat sketches and equations. **(10 Marks)**

b. How do you measure capacitance constant and acceleration of an acceleration sensor? Explain with the help of relevant graphs. **(10 Marks)**

OR

4 a. Draw the block diagram of the interface circuit used for measuring the capacitance of acceleration sensor and explain how this interfacing circuit works. **(10 Marks)**

b. Draw the diagram of Tire Pressure Monitoring Sensor [TPMS) and explain its functioning. Also explain the applications of latest acceleration sensors. **(10 Marks)**

Module-3

5 a. Explain the principle of operation and structure of moisture sensors of recent types. **(10 Marks)**

b. Discuss auxiliary experimental results of moisture sensors. **(10 Marks)**

OR

6 a. Explain the principle of operation of optoelectronic microphone with the help of suitable sketches. **(10 Marks)**

b. Discuss the results of experiments performed on the optoelectroelectronic microphones. **(10 Marks)**

Module-4

7 a. What is a "Lab on a Chip"? Explain the General structure of a "Lab on a Chip" with the help of a neat diagram. **(10 Marks)**

b. Explain the principle of operation of magnetic field sensor with the help of neat sketches. **(10 Marks)**

OR

8 a. Describe Theoretical description of magnetic field sensors with the help of relevant equations. **(10 Marks)**

b. Discuss experimental results performed on magnetic field sensors. **(10 Marks)**

Module-5

9 a. Explain the principle of operation of Aircraft Icing Detectors. **(10 Marks)**

b. Discuss experimental Results Performed on Aircraft Icing Detectors. **(10 Marks)**

OR

10 a. Discuss Theoretical Description of Aircraft Icing Detectors. **(10 Marks)**

b. Discuss various special purpose small scale Devices in detail. **(10 Marks)**

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