

CBCS SCHEME

18EC652

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Sixth Semester B.E. Degree Examination, July/August 2022 Sensors and Signal Conditioning

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain different types of sensors used in measurement systems. (06 Marks)
- b. Describe different types of primary pressure sensors with diagram. (08 Marks)
- c. Discuss liquid conductivity sensors with diagram. (06 Marks)

OR

- 2 a. Discuss advantages of sensors used in electronic measurement systems. (06 Marks)
- b. Describe different types of level sensors with diagram. (06 Marks)
- c. Explain different types of resistive gas sensors. (08 Marks)

Module-2

- 3 a. Describe the principle operation of Linear Variable Differential Transducer (LVDT) with diagram. (08 Marks)
- b. Explain various types of general AC bridges. (06 Marks)
- c. Discuss basic circuit for digital to resolver converter. (06 Marks)

OR

- 4 a. Discuss capacitive level sensors for conductive liquid and non-conductive liquid. (06 Marks)
- b. Describe the principal operation of hall effect sensors with diagram. (08 Marks)
- c. Explain Suchro to Resolver converters with diagram. (06 Marks)

Module-3

- 5 a. Explain seebeck effect and peltier effect in thermocouples. (06 Marks)
- b. Discuss photovoltaic effect in photo voltaic sensors. (06 Marks)
- c. Describe measurement arrangement using An Ion-Selective Electrode(ISE). (08 Marks)

OR

- 6 a. Describe law of Homogeneous circuits and law of inter mediate metals for thermocouples. (06 Marks)
- b. Discuss Peizoelectric materials used in Peizoelectric materials used in Peizoelectric sensors. (06 Marks)
- c. Explain the pyroelectric effect in puroelectric sensors. (08 Marks)

Module-4

- 7 a. Discuss optical incremental encoder based on interference fringes with diagram. (06 Marks)
- b. Explain vibrating wire strain gages used in resonant sensors. (06 Marks)
- c. Describe different types of sensors based on Quartz resonators. (08 Marks)

OR

- 8 a. Explain quartz digital thermometer with diagram. (06 Marks)
- b. Discuss vibrating cylinder sensors to measure liquid density. (06 Marks)
- c. Describe vertex shedding flow meters used in digital flow meters. (08 Marks)

Module-5

- 9 a. Describe sensors based on MOSFT transistors. (10 Marks)
b. Explain A two – phase CCD based on n –type regions of different conductivity. (10 Marks)

OR

- 10 a. Explain different types of photoelectric sensing modes used in phototransistors. (06 Marks)
b. Describe Block diagram of CCD line image sensor. (08 Marks)
c. Discuss the fundamentals of ultra sonic – based sensors. (06 Marks)
