

Duration 3 Hours

[Total Marks : 80]

**Note :** 1. Question No. 1 is **compulsory**.2. Attempt any **three** questions from remaining **five** questions.

3. Assume suitable data if necessary.

- Q. 1 Answer the following:** **20**
- a) Explain why dark current is associated with photodiodes.
  - b) Discuss advantages of Kelvin sensing system used for sensing signals from remotely driven bridge circuits .
  - c) Discuss the factors which affect accuracy of capacitive sensors.
  - d) Explain measurement error sources in RTDs with remedies.
- Q. 2** a) Explain working principle of encoders and discuss the ways to increase its resolution. 10
- b) Discuss thin and thick film sensors with applications. 10
- Q.3** a) Explain circuit used for processing signals from capacitive transducers. 10
- b) Draw and explain generic architecture of smart transducer with its features. 10
- Q.4** a) Explain advantages and methods of implementation of ratio metric measurement. 10
- b) Explain why photodiode used in photoconductive mode can give higher speed and higher dark current as compared to photodiode used in photovoltaic mode 10
- Q.5** a) Explain the need of preamplifiers in processing signals from radioactivity and discuss different types of preamplifiers. 10
- b) Explain signal processing circuit used for processing output of LVDT. 10
- Q.6** Write short notes on the following – **(Any Two)** 20
- a) Signal processing for sensors with high output impedance.
  - b) Single channel analyzer.
  - c) Semiconductor temperature sensors.
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