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B.Tech II Year I Semester (R15) Regular & Supplementary Examinations November/December 2018 SENSORS & TRANSDUCERS

(Electronics and Instrumentation Engineering)

Max. Marks: 70

Time: 3 hours

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# PART – A

(Compulsory Question)

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- Answer the following: (10 X 02 = 20 Marks)
  - (a) Define 'Gauge factor'.
  - (b) List out the limitations of LVDT.
  - (c) What are the applications of Capacitive sensors?
  - (d) Explain about the piezoelectric effect.
  - (e) What is the principle involved in material expansion type of thermal sensor?
  - (f) List out the salient features of pyroelectric type radiation sensors.
  - (g) Explain about Wiedemann effect for Yoke coil sensors.
  - (h) What are 'Scintillation detectors?
  - (i) What are the advantages of 'Onboard automobile sensors?
  - (j) Compare 'Aerospace sensors and Nano sensors.

### PART – B

(Answer all five units, 5 X 10 = 50 Marks)

# UNIT – I

2 Derive the expression for Gauge factor for 'strain gauge'. Also, explain the principle involved in strain gauge.

# OR

3 With a neat construction diagram of LVDT, explain its operation and give its applications?

# UNIT - II

4 Compare variable distance and variable area types of capacitive sensors with respect to any four parameters.

# OR

5 Explain the stretched diaphragm type microphone's response characteristics.

### UNIT – III )

6 Explain in detail about material expansion type thermal sensors.

#### OR

7 Discuss in detail about various types of thermo emf sensors.

# UNIT – IV

8 Draw the construction diagram of LDR and explain its operation.

### OR

9 Enumerate the operation, concepts involved in photodiodes.

# UNIT – V

10 Explain in detail about various home appliance sensors.

### OR

11 What are smart sensors and explain its applications in detail?

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