

Total No. of Questions : 8]

SEAT No. :

PD4440

[Total No. of Pages : 2

[6403]-245

T.E. (Robotics & Automation Engineering)

SENSOR TECHNOLOGY

(2019 Pattern) (Semester - V) (311504A)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.
- 2) Assume suitable data, if necessary.
- 3) Use of electronic pocket calculator is allowed.
- 4) Neat diagrams must be drawn wherever necessary.

Q1) a) Explain the following terms: [8]

- i) Thermocouple Sensors
- ii) Gas Thermometers

b) Define Temperature and Explain following terms [9]

- i) Thermal Energy
- ii) Absolute and Relative Temperature

OR

Q2) a) Explain the following terms: [8]

- i) Resistance versus Temperature Approximations
- ii) Semiconductor Resistance versus Temperature

b) Define Thermistor and Thermocouple and explain three characteristics of each. [9]

Q3) a) With neat sketch, explain the working of Piezoelectric Accelerometer. [8]

b) What are the types of Level sensors explain any two with suitable diagram also state the advantages and application of both. [9]

OR

Q4) a) Explain [8]

- i) Shock and Vibration Sensors
- ii) Variable-Reluctance Sensors

b) Draw the circuit diagram and explain the operation of LVDT also state the advantages and application of the same. [9]

P.T.O.

**Q5) a)** With the help of neat diagram explain Quartz Sensors also state the advantages and application of the same. [9]

**b)** Explain working of load cell with suitable diagram also state the advantages and application of the same. [9]

OR

**Q6) a)** Explain Standards Strain Gage Sensors also state the advantages and application of the same. [9]

**b)** Compare Metal type and Semiconductor type Strain Gauge. [9]

**Q7) a)** Explain in detail [9]

i) Phototransistor

ii) Photo sensors

**b)** Explain in detail Position and Motion Sensors with their different types. [9]

OR

**Q8) a)** Write a short note on Nanotechnology-Enabled Sensors also state the advantages and application of the same. [9]

**b)** Explain the Thermal Detectors with their different types. [9]

