Total No. of Questions : 8]

SEAT No. :

PB-3977

[Total No. of Pages : 2

[6262]-319

T.E. (Robotics & Automation Engineering)

SENSORS TECHNOLOGY

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

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***All questions are compulsory i.e. Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
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 working principle of Resistance Temperature Detector (RTD). Also list the several applications of RTD **[8]**

b) Explain different "Governing Laws used in Thermocouple" also explain in detail Freiheit, Celsius and Kelvin scale of temperature with suitable examples. **[9]**

OR

Q2) a) Write a short note on thermistor. **[8]**

b) Explain the following term **[9]**

i) Thermal Energy

ii) Absolute Temperature

iii) Relative Temperature

Q3) a) What is Position Sensor? Explain in details about LVDT. **[8]**

b) Distinguish between "Point Type Level Sensor" and "Continuous Type Level Sensor" **[9]**

OR

Q4) a) Write a short note on Continuous Type Level Sensor **[8]**

b) Compare Piezoelectric Accelerometer and Piezoresistive Accelerometer. **[9]**

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Q5) a) Explain the working of Load Cell with suitable circuit diagram also state the advantages and application of the same. **[9]**

b) What is Gauge Factor? Derive and expression for Gauge Factor in terms of poisons ratio. **[9]**

OR

Q6) a) Explain Bounded type Strain Gauge also state the advantages and application of the same. **[9]**

b) Explain the role of Wheatstone Meter Bridge in Strain Gauge Circuit also state the advantages and application of the same. **[9]**

Q7) a) Explain in details Nanotechnology-Enabled Sensors. **[9]**

b) Write a short note on Thermal Detectors and explain its any two types. **[9]**

OR

Q8) a) Write a short note on Nanotechnology. **[9]**

b) Write a short note on position and motion sensors. **[9]**

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