

R18

Code No: 157EN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, December-2023/January-2024

**ELECTRONIC SENSORS
(Common to CE, ME, EIE)**

Time: 3 Hours

Max.Marks:75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) Give the classification of sensors. [2]
- b) Differentiate between sensor and transducer. [3]
- c) What are heat flux sensors? [2]
- d) Write about nuclear thermometer? [3]
- e) What is meant by magneto resistive sensing? [2]
- f) Write about the principle of active semiconductor magnetic sensor. [3]
- g) What are different types of photo detectors? [2]
- h) Write about the Standard Hydrogen Electrode. [3]
- i) Give the applications of smart sensors. [2]
- j) Write a short note on TDR soil moisture sensor. [3]

PART – B

(50 Marks)

- 2.a) Discuss about the sensor characterization methods.
 - b) Explain the principle and working of electrostatic transducer. [5+5]
- OR**
- 3.a) Discuss about inductive sensors.
 - b) Describe about Stress Sensors Using Quartz Resonators. [5+5]
- 4.a) How is temperature range calculated using a thermocouple sensor?
 - b) Write a short note on Thermal Radiation Sensors. [5+5]
- OR**
- 5.a) Describe the operation of resistance change type thermometric sensors.
 - b) Discuss about the dielectric constant and refractive index thermo sensors. [5+5]
- 6.a) Discuss about the working principle and operation of a yoke coil sensor.
 - b) Describe the operation of a Semiconductor Magneto resistors. [5+5]
- OR**
- 7.a) Explain the working operation of variable inductance sensor.
 - b) Describe the circuit diagram of interface for LVDT sensor. [5+5]

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8.a) Write a short note on The Electrochemical Cell.

b) Explain the following:

i) Reference electrode

ii) Photo detector

[5+5]

OR

9.a) Briefly describe the Polarization in Electro analytical Sensor.

b) Explain the following:

i) Liquid junction

ii) Sensor Electrode

[5+5]

10.a) Write a short note on Information Coding in data communication.

b) Explain the concept of Amplification in Smart sensing system.

[5+5]

OR

11.a) Write a short note on Sensors for environmental monitoring

b) Describe about the Aerospace Sensors.

[5+5]

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QA QA QA QA QA QA QA QA QA

QA QA QA QA QA QA QA QA QA

QA QA QA QA QA QA QA QA QA

QA QA QA QA QA QA QA QA QA