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**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING  
MID TERM EXAMINATION - NOV 2023**

**Semester :** Semester V - 2021

**Course Code :** EEE3016

**Course Name :** Sem V - EEE3016 - Sensors Actuators and Controls

**Program :** B. TECH

**Date :** 2-NOV-2023

**Time :** 2:00PM - 3:30PM

**Max Marks :** 50

**Weightage :** 25%

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**Instructions:**

- (i) Read all questions carefully and answer accordingly.
  - (ii) Question paper consists of 3 parts.
  - (iii) Scientific and non-programmable calculator are permitted.
  - (iv) Do not write any information on the question paper other than Roll Number.
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**PART A**

**ANSWER ALL THE QUESTIONS**

**(5 X 2 = 10M)**

1. The **Thermistor** is a solid state temperature sensing device which acts a bit like an electrical resistor but is temperature sensitive. Define the self heating effect of a thermistor.  
(CO1) [Knowledge]
2. Define the term dark resistance in a photoresistor  
(CO1) [Knowledge]
3. The resistance wire of the Resistive Temperature Detector (RTD) is mostly made up of platinum, nickel, or copper. List the features of these materials that made them suitable to use as a resistive element in RTD.  
(CO1) [Knowledge]
4. List the advantages of LVDT  
(CO2) [Knowledge]
5. Explain one application of Microsyn as a rotary transducer  
(CO2) [Knowledge]

**PART B**

**ANSWER ALL THE QUESTIONS**

**(2 X 10 = 20M)**

6. A manufacturing industry need a sensor for the remote monitoring of its plant temperature. The temperature has to be monitored continuously and is to be used for temperature control. Identify a sensor which is having a linear characteristic for this industry. With neat circuit diagram explain its working.  
(CO1) [Comprehension]

7. Precise position control enhances the safety and efficiency of any automated process. Identify the sensor/transducer that can be integrated into the automation systems and robots to provide feedback on the position of robotic arms, grippers, and other moving parts. The sensor should have high range, good sensitivity and low power consumption. With neat sketch explain the construction and working principle of the same.

(CO2) [Comprehension]

### PART C

#### ANSWER THE FOLLOWING QUESTION

(1 X 20 = 20M)

8. The resistance of platinum resistance thermometer varies with the temperature. This property is used for measuring the temperature.

The resistance of a platinum wire of a platinum resistance thermometer at the ice point is  $5\Omega$ , and at steam point is  $5.4\Omega$ . When the thermometer is inserted in a hot bath, the resistance of the platinum wire is  $6.2\Omega$ . Find the temperature of the hot bath.

List the advantages and disadvantages of platinum resistance thermometer.

(CO1) [Application]