Vidyavardhini's College of Engineering and Technology, Vasai (West)

First Year Engineering

Academic Year: 2024-2025

Problem Set 3: Transducers

Subject: BSC2023/EP **Date: 24/02/2025**
Max Marks: 10 **Submission Deadline: 07-03-2025**

CO3: To learn the foundation of transducers in the area of measurements.

Q. No.	Questions	Marks	CO	CL
1	(a) A thermistor has a resistance of 10 kΩ at 25°C and 6 kΩ at 50°C. Calculate the temperature coefficient of resistance. (b) A resistive temperature detector (RTD) has a resistance of 120 Ω at 0°C. If its temperature coefficient is 0.00392/°C, determine its resistance at 50°C.	4	3	2
2	(a) An inductive transducer has an inductance of 10 mH and operates at a frequency of 1 kHz. Determine the reactance. (b) A potentiometer has a total resistance of 5 kΩ and a supply voltage of 10V. If the wiper is at 60% of its travel, determine the output voltage.	4	3	2
3	(a) A strain gauge has an initial resistance of 120 Ω. When a strain is applied, its resistance changes to 122.4 Ω. If the gauge factor (GF) is 2, determine the strain.	2	3	2

NB: All sensors are temperature sensors, but some are better than others!
– Anonymous