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Examination: Supplementary Examination 2023

Paper Name: Sensors and Instrumentation
Time: 3 Hours

Paper Code: BTECE 607
Maximum Marks: 75

Section A

Note: Attempt ALL the questions

7x5=35

Q. No.	Question	Marks	CO	BL
1.	Explain the term transducers? Elaborate using examples.	5	CO1	3
2.	Evaluate the working of a mutual inductive transducers.	5	CO2	5
3.	Show how capacitance will change when the distance between the plate's changes. List out the advantages and disadvantages of capacitive transducers.	5	CO3	5
4.	A platinum resistive thermometer has a resistance of 100 Ω at 0°C. What is the temperature when resistance is 300 Ω ? Also find the value of temperature when the thermometer is having a resistance of 800 Ω . The resistance temperature co-efficient of the platinum is 0.00392/°C.	5	CO4	5
5.	Analyse Modes of operation of Piezo-electric crystals.	5	CO3	6
6.	Explain the working principle of RTD's. What are the advantages of using such thermometer?	5	CO4	6
7.	Explain the basic structure of typical intelligent sensor and actuator.	5	CO5	4

Section B

Note: Attempt any FOUR (4) Questions

(4x10=40)

Q.No.	Question	Marks	CO	BL
1.	Write short notes on the following: a) Repeatability b) Resolution c) Threshold d) Sensitivity	10	CO1	3
2.	Based on the principle of inductive sensing, explain the construction and working principle of an LVDT. Explain its input-output relationship and draw the I/O curve.	10	CO2	4
3.	Based on the principle of change in area of overlap between the plates, explain the working of a capacitive transducer.	10	CO3	2

4.	Analyse the role of material, working principle and construction of different types of thermistors.	10	CO4	2
5.	What are the different types of magnetic sensors for the assessment of force, torque, rpm and proximity measurement? Explain any one of them in details.	10	CO5	6
6.	A linear resistance potentiometer is 50 mm long and it is uniformly wound with a wire having a resistance of 10,000 Ω. Under normal conditions, the slider is at the centre of the potentiometer. Find the linear displacement when the resistance of the potentiometer as measured by a Wheatstone bridge for the two cases are: a) 3850 Ω b) 7560 Ω	10	CO1	5

BL : Bloom's Taxonomy Level (1-Remembering, 2-Understanding, 3-Applying, 4- Analysing, 5-Evaluating, 6- Creating)