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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2024

SENSORS AND TRANSDUCERS

[Maximum marks: 75] [Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Name one primary transducer.	M1.01	U
2	List any one application of Strain Gauge.	M1.03	U
3	Name one inductive transducer.	M2.01	R
4	List any one application of piezoelectric transducer.	M2.04	U
5	Name one Photo emissive transducer.	M3.01	U
6	List any one application of Hall effect transducer.	M3.03	U
7	Name the device which is used to transmit instrumentation signals.	M4.01	U
8	What is Smart Transmitter?	M4.02	U
9	What is Nano sensor?	M4.02	U

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Describe active and passive transducers with one example each.	M1.01	U
2	Mention the basic principle of resistive transducers.	M1.02	U
3	Write the working principle of LVDT.	M2.02	U
4	Define voltage sensitivity of a piezoelectric crystal.	M2.04	U
5	Name any three classifications of photoelectric transducers.	M3.01	U
6	Write the principle of level measurement using ultrasonic transducer.	M3.02	U
7	Name the components of a smart sensor.	M4.02	U
8	List any three advantages of smart sensors.	M4.02	U
9	Mention any three resistive transducers.	M1.02	U
10	Differentiate Direct mount and remote seal type transmitters.	M4.03	U

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Derive expression for Gauge Factor of Strain Gauge.	M1.02	A
	OR		
IV	Explain the construction of RTD.	M1.02	U
V	Describe pressure measurement using LVDT.	M2.02	U
	OR		
VI	Describe the equivalent circuit of piezoelectric transducer.	M2.04	U
VII	Explain the working of photo diode with a neat diagram.	M3.01	U
	OR		
VIII	Explain the working principle of hall effect transducers, with a neat sketch.	M3.03	U
IX	Explain the working of smart transmitter with its block diagram.	M4.02	U
	OR		
X	Describe the working of Capacitive type differential pressure transmitter.	M4.03	U
XI	Explain Displacement measurement using potentiometer.	M1.03	U
	OR		
XII	Derive loading effect of a potentiometer.	M1.02	A
XIII	Explain the working principle of Eddy Current Transducer.	M2.02	U
	OR		
XIV	Explain level measurement using capacitive transducers.	M2.03	U

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