B.E. Instrumentation Engineering (CBCS Pattern) Third Semester CBCS 3BEIE04 - Sensors & Transducers

P. Pages: 2

Time : Three Hours

GUG/W/18/11514

Max. Marks: 80

1 1111		* 3 5 9 4 *	Max. Marks . 00
	Note	 Same answer book must be used for each question. All questions carry marks as indicated. Assume suitable data wherever necessary. Illustrate your answers wherever necessary with the help of neat sket 	ches.
1.	a)	Define the following terms.	8
		i) Primary standard.	
		ii) Secondary standard.	
		iii) International standard.	
		iv) National standard.	
	b)	Elaborate sensor and transducers. Give the classification of transducers accord application.	ling to its 8
		OR	
2.	a)	Illustrate the concept of calibration and it's need.	8
	b)	Write a short note on selection criteria for transducers.	8
3.	a)	State the principle of strain gauge. Draw and explain different types of strain g	gauges. 8
	b)	Describe how pieroelectric effect is used in transducer for force measurement.	8
		OR	
4.	a)	A strain gauge is bounded to a beam 0.1.m. long and has a cross-sectional area α modulus for steel is 207 GN/m ² . The strain gauge has an unconstrained resis Ω and gauge factor of 2.2. When a load is applied, the resistance of gauge char Ω . Calculate positive change in length of the steel been and an amount of for the beam.	4cm ² young's 8 tance of 240 ges by 0.013 ce applied to
	b)	Illustrate in detail basic methods for measurement of force.	8
5.	a)	How the displacement is measured using resistive transducers? Explain with s examples.	uitable 8

b) Discuss the loading effect on the accuracy of a resistance potentiometer transducer when **8** used for measurement of displacement.

OR

6.	a)	Draw and Discuss Hall effect transducers in detail.	8		
	b)	How thickness can be measured with the help of ultrasonic transducer.	8		
7.	a)	State different types of encoders. Explain with neat sketch any one of them.	8		
	b)	Describe the setup of measurement of the speed with the help of photo pickups.	8		
OR					
8.	a)	Discuss the seismic type and picroelectric type instruments for vibration measurements.	8		
	b)	Give the construction, Working, principle of electromagnetic and photoelectric tachometer.	8		
9.	a)	List various viscosity measurement sensors and describe any one in details.	8		
	b)	Illustrate the working principle of capacitive and inductive proximity sensors.	8		
		OR			
10.	a)	Draw the block diagram of sound level meter and explain its working principle.	8		

b) Write a short note on Flame detector.

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