



BRAINWARE UNIVERSITY

Term End Examination 2023 Programme – B.Tech.(ECE)-2019 Course Name – Sensors and Transducers Course Code - OEC802B (Semester VIII)

Full Marks: 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15 1. Choose the correct alternative from the following: (i) Which of the following is correct for flapper nozzle system? a) Used in hydraulic system only b) Used in pneumatic system only c) Used in both hydraulic and pneumatic d) None of the mentioned system (ii) Select the range of displacement of flapper required to change output pressure over the useful range is known as a) Cut-off displacement b) Throttling range c) Threshold value d) Break value (iii) Which of the following error is caused by a reversal of measured property? a) Hysterisis b) Noise c) Digitization error d) Quantization error (iv) Which of the following is not an analog sensor? a) Potentiometer b) Force-sensing resistors c) Accelerometers d) None of the mentioned (v) is used to prevent oscillation in moving system. a) Oscillatory system b) Controlling c) Damping system d) Deflecting (vi) The point is not a characteristic of an ideal transducer a) High dynamic range b) Low linearity c) High repeatability d) Low noise (vii) The active transducer is a) Strain gauge b) Thermistor c) LVDT d) Thermocouple (viii) Select the following is correct for the tachometer system

b) Second order system

d) Third order system

a) First order system

c) Third order system

(1/)	in photo emissive transducers, electrons are a	thacted by		
	a) Cathode	b) Anode		
	c) Grid	d) Body		
(x)	x) Indicate that inert gas is used in photo electric transducers			
	a) To increase efficiency	b) To increase sensitivity		
	c) To increase robustness	d) None of the mentioned		
(xi)	i) Choose the following quantities are insensitive to solid state semiconductor			
	photoelectric transducers			
	a) X ray	b) Gamma ray		
	c) Alpha and beta rays	d) None of the mentioned		
(xii	LDR's are also called			
	a) Photo voltaic cell	b) Photo resistive cell		
	c) Photo emissive cell	d) All of the mentioned		
(xiii	Determine the uses that convert displacement	to pressure conversion?		
	a) Flapper nozzle system	b) Gyroscope		
	c) Viscometer	d) None of the mentioned		
(xiv	(xiv) Displacement to pressure systems are used for measuring			
	a) Displacement	b) Velocity		
	c) Acceleration	d) Force		
(xv	(xv) The correct relation between pressure and displacement in flapper nozzle system is			
	a) Direct proportionality	b) Inverse proportionality		
	c) Equal	d) None of the mentioned		
Group-B			2 5 45	
	(Short Answer T	ype Questions)	3 x 5=15	
2 г	escribe an active transducer with example.		(3)	
3. List out the features of piezo-electric accelerometer.			(3)	
4. Explain the potentiometer and loading effect.			(3)	
5. Briefly explain types of level transducers.			(3)	
6. Differentiate between Primary and Secondary transducers.			(3)	
OR				
Differentiate between Transducers and Inverse Transducers.			(3)	
	Grou	·		
	(Long Answer T	ype Questions)	5 x 6=30	
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	7. Explain the working principle of variable inductance transducer.		(5)	
	Draw the typical curves to show the variations of errors with input displacement for		(5)	
	different values of load resistance.			
	Explain that the sensitivity and linearity are two requirements in a resistance potential divider.			
	10. Explain positive magnetostriction and negative magnetostriction.			
	11. Describe the Villari effect and Weidman effect.		(5) (5)	
12. Explain Vapour filled thermometers.			(5)	
OR			ν-1	
	Explain parallel plate capacitive transducers.		(5)	
