Total number of printed pages:70 **UG/ 4th Sem/UIE402**

2023

SENSORS AND TRANSDUCERS

Full Marks: 100 Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1	a	What are the unit of pressure? What is vacuum pressure?	04
	b	An Optical fibre has a refractive index of 1.641 for core and 1.422 for the cladding. What will be the critical angle?	06
	c	Draw internal diagram of 555 Tmer.	04
	d	Compare by advantage and disadvantage of four temperature sensors Thermocouple, RTD, Thermistor, IC temperature Sensor.	06
2	a	Write compositions & temperature range.J, K,E,R types of thermocouples.	04
	b	A strain gauge has a gauge factor of 2.1. If it is stretches from 30cm to 31cm, what is the % change in resistance?	06
	c	What is the need of cold junction compensation?	04
	d	Draw and explain working principle of photodiode.	06
3	a	Draw complete LVDT circuit with phase sensitive demodulation.	04
	b	Explain the principle difference between photo diode, photo transistor and photo voltaic cell.	06
	c	Describe the five Thermocouple laws.	04
	d	Write the block diagram of phase lock loop.	06
4	a	Write a short note on IC temperature sensor.	04
	b	If visible light violet has wavelength 400nm, what will be its frequency?	06
	c	How Piezoelectric accelerometers work?	04
	d	Draw the essential parts of a Bourdon tube pressure gauge.	06
5	a	How A.C tacho generators work?	04
	b	Write short notes on Stroboscope.	06
	c	How a Bimetallic thermometer works?	04
	d	Write short notes on Optical radiation pyrometer.	06
6	a	Write the features AD590 IC temperature sensor.	04
	b	Write a note on Elastic type pressure sensor.	06
	c	How drug cup tacho generators work?	04
	d	Draw the Setup of Total radiation pyrometer.	06
7	a	Write the equation of gauge factor and explain.	04
	b	Draw and explain working principle of LED.	06
	c	If PT100 is used for measurement of temperature than at what temperature its resistance is 110 ohm. Alpha= .0038 ohm/ohm/C	04
	d	Explain temperature measurement using 3 wires RTD using whetstone bridge circuit.	06