GURU NANAK INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT
2021
SENSORS & TRANSDUCERS
EE802A

TIME ALLOTTED : 3 Hrs **FULL MARKS : 70**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable

GROUP – A

(Multiple Choice Type Questions)

Answer any ***ten*** from the following, choosing the correct alternative of each question: **10×1=10**

		Marks	CO No
1.	Function of transducer is to convert a. Electrical signal into non electrical quantity b. Non electrical quantity into electrical signal c. Electrical signal into mechanical quantity d. All of these	1	CO1
ii.	Potentiometer transducers are used for the measurement of a. Pressure b. Displacement c. Humidity d. Both (a) and (b)	1	CO3
iii.	Which of the following devices cannot be used to measure pressure? a. Strain gauge b. LVDT c. Piezoelectric crystal d. pyrometer	1	CO1
iv.	The linear variable differential transformer transducer is a. Inductive transducer b. Non-inductive transducer c. Capacitive transducer d. Resistive transducer	1	CO3
v.	If at one end, the two wires made of different metals are joined together then a voltage will get produced between the two wires due to difference of temperature between the two ends of wires. This effect is observed in a. Thermocouples b. Thermistors c. RTD d. Ultrasonics	1	CO3

vi.	For the measurement of pressure the instruments used can be a. Mechanical b. Electro-mechanical c. Electronic d. All of these	1	CO2
vii.	How many types of transducers are there? a. 2 b. 4 c. 6 d. 8	1	CO2
viii.	Mechanical transducers sense _____ a. electrical changes b. physical changes c. chemical changes d. biological changes	1	CO2
ix.	Piezoelectric transducers are a. Passive transducers b. Active transducers c. Inverse transducers d. Both (b) and (c)	1	CO1
x.	Electrical transducers generate _____ a. biological signals b. chemical signals c. physical signals d. electrical signals	1	CO2
xi.	Which of the following is correct for tactile sensors? a. Touch sensitive b. Pressure sensitive c. Input voltage sensitive d. Humidity sensitive	1	CO2
xii.	Electrical transducers are _____ a. small and non-portable b. large and non-portable c. small and compact d. large and portable	1	CO2

GROUP – B
(Short Answer Type Questions)

(Answer any *three* of the following) **3 x 5 = 15**

		Marks	**CO No**
2.	Write down the working principal of capacitive sensor	5	CO3
3.	Write down the working principal of proximity sensor	5	CO3
4.	Write down the working principal of hall effect transducer	5	CO2
5.	Write down the working principal of Piezoelectric transducer	5	CO2

6.	Write down the advantages and disadvantages of capacitive sensor?	5	CO2

GROUP – C
(Long Answer Type Questions)
(Answer any *three* of the following) **3 x 15 = 45**

		Marks	**CO No**
7.a)	Describe the working principal of potentiometric type transducer;	7	CO1
b)	Describe the materials used for potentiometric type transducer along with their properties; Give applications of potentiometric type transducer.	8	CO4
8.a)	Describe the working principal of potentiometric type transducer;	7	CO1
b)	Describe the materials used for potentiometric type transducer along with their properties; Give applications of potentiometric type transducer.	8	CO4, CO3
9.a)	Describe the working and construction of RTD's.	8	CO1
b)	Describe the materials used for LVDT's along with their properties. Give some application of LVDT.	7	CO4
10.a)	Describe the working and construction of thermocouple. Describe the materials used for thermocouple along with their properties.	7	CO2
b)	Describe the working principal of strain gauge.	4	CO1
c)	Describe the working principal of proximity sensor.	4	CO3
11.a)	Describe the working and construction of Proximity sensor.	5	CO3
b)	Describe the materials used for strain gauge along with their properties; Describe the advantages, disadvantages and applications of strain gauge.	5	CO4
c)	Describe the advantages, disadvantages and applications of thermocouple.	5	CO3