

# C. U. SHAH UNIVERSITY

## Summer Examination-2022

Subject Name : Sensor Technology

Subject Code : 4SC06SNT1

Branch: B.Sc. (Physics)

Semester: 6

Date: 07/05/2022

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

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<b>Q-1</b>	<b>Attempt the following questions:</b>	<b>(14)</b>
	a) What is a transducer?	01
	b) Name any three opto-electrical transducers.	01
	c) Name any two types of pyrometers.	01
	d) What are the non-electrical temperature measurement methods?	01
	e) Draw only figure of solid rod thermometer.	01
	f) Write necessary conversion formulas of different temperature scales.	01
	g) What are the three main temperature measurement systems?	01
	h) Name different units of pressure. How are they related to each other?	01
	i) What are the main characteristics of sound waves?	01
	j) What do you mean by the term ppm?	01
	k) List the factors necessary to choose appropriate Thermocouple Materials.	01
	l) Name different electrical methods of temperature measurements.	01
	m) Name different types of radiation measurement systems.	01
	n) Define : Thermocouple.	01

**Attempt any four questions from Q-2 to Q-8**

<b>Q-2</b>	<b>Attempt all questions</b>	<b>(14)</b>
	(A) Relate different capacitive type transducers with figure and associated circuits with necessary formula. Plot the o/p frequency response curve.	<b>07</b>
	(B) Write a short note on Piezoelectric transducers.	<b>07</b>
<b>Q-3</b>	<b>Attempt all questions</b>	<b>(14)</b>
	(A) Name the air pollution components? Discuss about exhaust gas analyzer.	<b>07</b>
	(B) Define : Manometer. Discuss : Inclined Manometer.	<b>07</b>
<b>Q-4</b>	<b>Attempt all questions</b>	<b>(14)</b>
	(A) Name the vacuum like negligibly low pressure measurement systems. Discuss any one of them.	<b>07</b>



- (B) Explain Principle, construction, working of Selective Radiation Pyrometer. Write its advantages and limitations. **07**
- Q-5 Attempt all questions (14)**
- (A) Narrate Bimetallic thermometers giving their principle, construction, working, figures, advantages and limitations. **08**
- (B) Discuss thermistors with definition, necessary formula and advantages in temperature measurements. Draw different types of thermistors. **06**
- Q-6 Define : Microphones. Make a list of different types of microphones and discuss any two of them. (14)**
- Q-7 Attempt all questions (14)**
- (A) Describe applications of optical fiber sensors. **07**
- (B) Distinguish between Intrinsic and Extrinsic optical fiber sensors. **07**
- Q-8 Write detailed notes giving definition, types, key-components, applications, advantages and disadvantages on each: (14)**  
(01) Bio sensors (02) Smart sensors.

