Enrollment No:	Exam Seat No:
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C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Instrumentation and Sensors

Subject Code: 4SC06ISE1 Branch: B.Sc. (Physics)

Semester: 6 Date: 25/04/2017 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.

Q-1		Attempt the following questions:	(14)
	a)	What is transducer?	01
	,	How many types of transducers?	01
	c)	Define: motion transducer.	01
	,	Write full name of LVDT.	01
	e)	Resistance of strain gauge is measured bycircuit.	01
	f)	State working principle of photo-emissive transducer.	01
	g)	Write applications of CRO.	01
		Define: pressure and write its MKS unit.	01
	i)	Which device is used to measure static pressure?	01
	.j)	Thermal conductivity gauge is also known as	01
	•	What is temperature? It is measured bylaw of thermodynamics.	01
	1)	State working principle of microphone.	01
	,	Define: environmental air pollution.	01
		What is smog?	01
Attempt		our questions from Q-2 to Q-8	0.1
Q-2	<u>-</u>	Attempt all questions	(14)
~ -	a)	Explain various types of pressure measurements transducers.	04
		Discuss dynamic characteristics of piezo-electric transducers.	05
	c)	Explain in brief the classification of transducer elements.	05
Q-3		Attempt all questions	(14)
QS	a)	Distinguish briefly smart sensor and optical-fiber sensor.	07
	b)	Write short notes on (1) CRO and (2) thermoelectric sensors.	07
Q-4		Attempt all questions	(14)
•	a)	Explain the construction and working principle of bimetallic thermometer.	07
	b)	On which principle does optical fibre work? Discuss briefly optical-fiber sensors with suitable diagram.	07

Q-5		Attempt all questions	(14)
	a)	What is McLeod Gauge? Explain briefly with suitable diagram.	07
	b)	Explain briefly different types of radiation method.	07
Q-6		Attempt all questions	(14)
	a)	Distinguish briefly photoconductive transducer and photo-voltaic transducer.	07
	b)	Write a short note on non-dispersive infrared gas analyzer.	04
	c)	State merits and demerits of bio-sensor.	03
Q-7		Attempt all questions	(14)
	a)	Discuss bounded and unbounded condition for resistance strain gauge elements.	07
	b)	How can we measure environmental air pollution parameters? Explain with mathematic equations.	07
Q-8		Attempt all questions	(14)
-	a)	Explain various types of microphones with help of neat and sketch diagram.	07
	b)	Discuss gas chromatography in brief with suitable diagram.	07

