Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Transducers & Measurement Practice
Subject Code: 4TE04TMP1 Branch: B.Tech (IC)

Semester: 4 Date: 18/05/2016 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) Potentiometer transducers are used for the measurement of
- A. Pressure
- B. Displacement
- C. Humidity
- D. Both (a) and (b)

b) Which among the below stated does not belong to the category of analog transducers?
- A. Shaft Encoder
- B. LVDT
- C. Thermistor
- D. RTD

c) Strain gauge is a
- A. Active device and converts mechanical displacement into a change of resistance
- B. Passive device and converts electrical displacement into a change of resistance
- C. Passive device and converts mechanical displacement into a change of resistance
- D. Active device and converts electrical displacement into a change of resistance

d) Advantage of passive instrument is
- A. It does not need power supply
- B. Cheap
- C. Sensitive
- D. Accurate

e) Absolute Zero Temperature corresponds to
- A. 0^0C
- B. 273^0K
- C. -273^0C
- D. 0^0F

f) The principle of operation of LVDT is based on the variation of
- A. Self inductance
- B. Mutual inductance
- C. Reluctance
- D. Permanence

g) Which of the following can be measured with the help of piezo electric crystal?
   A. Force
   B. Velocity
   C. Sound
   D. Temperature

h) The rate at which fluid flows through a closed pipe can be determined by
   A. Determining the mass flow rate
   B. Determining the volume flow rate
   C. Either (a) or (b)
   D. None of these

i) 37^0C is equal to
   A. 100^0F
   B. 99^0F
   C. 98.6^0F
   D. 99.6^0F

j) The devices used for flow obstruction is/are
   A. Orifice plate
   B. Venturi tube
   C. Flow nozzle and dall flow tube
   D. All of these

k) What is the full form of IEEE?
   A. International Electronics Engineers Enterprise
   B. International Electrical & Electronics Engineers
   C. Institute for Engineers of Electrical & Electronics
   D. Institute of Electrical & Electronics Engineers

l) Hysteresis of an instrument means:
   A. The change in the same reading when input is first increased and then decreased
   B. The reliability of the instrument
   C. The repeatability of the instrument
   D. The inaccuracy due to change in temperature

m) The most common application of float system is
   A. To monitor the fuel tank level in motor vehicle
   B. To monitor the flow of solid
   C. To monitor the flow of liquid
   D. All of these

n) In radiation methods, the detector system is located at
   A. The top of the liquid filled tank
   B. The bottom of liquid filled tank
   C. Middle of the liquid filled tank
   D. Outside a liquid filled tank

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

Q-2		**Attempt all questions**	
	(a)	What is damping? Explain various types of damping mechanisms utilized in measuring instruments.	**(7)**
	(b)	Explain the working of RTD and Thermistor	**(7)**
Q-3		**Attempt all questions**	
	(a)	Enlist and explain non-contact type temperature measurement techniques	**(7)**
	(b)	Explain the construction and working of LVDT	**(7)**
Q-4		**Attempt all questions**	
	(a)	Write a brief note on dynamic characteristics of measuring instruments.	**(7)**
	(b)	Explain Air Purge system	**(7)**
Q-5		**Attempt all questions**	
	(a)	Define Transducer. Write a detailed note on Classification of transducers.	**(7)**
	(b)	Explain piezoelectric pressure transducer with advantages and disadvantages	**(7)**
Q-6		**Attempt all questions**	
	(a)	Explain Metallic & Stack Diaphragm	**(7)**
	(b)	Draw and explain C- type Bourdon pressure gauge and its calibration method.	**(7)**
Q-7		**Attempt all questions**	
	(a)	Explain Ultrasonic Level Detector with advantages & disadvantages.	**(7)**
	(b)	Write a detailed note on the application of Rotameters for Flow measurement.	**(7)**
Q-8		**Attempt all questions**	
	(a)	Explain Optical type level measurement technique	**(7)**
	(b)	Explain principle & operation of Pitot tube & Flow nozzle.	**(7)**