Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 151702 **Date:08/12/2015**

Subject Name: Sensors and Signal Conditioning

Time: 10:30am to 1:00pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Why LVDT is called linear transducer? Draw and describe construction, working, benefits and limitation of LVDT.	**07**
	(b)	Explain Data Logger in detail	**07**
Q.2	**(a)**	Describe the construction and operation of a thermal conductivity gauge and show that it can be used for analysis of binary gas mixture.	**07**
	(b)	Derive the expression of gain for the instrumentation amplifier and its special role in instrumentation?	**07**
		OR	
	(b)	Discuss hall effect phenomenon. Explain its application.	**07**
Q.3	**(a)**	Draw a circuit of a Schmitt trigger and suggest its applications.	**07**
	(b)	Explain how electrode system is designed for measurement of hydrogen (pH) Ion concentration and indicate the problems associate with the measurement.	**07**
		OR	
Q.3	**(a)**	Explain the techniques of obtaining direct and indirect Frequency modulation.	**07**
	(b)	Explain the principle of operation of electromagnetic flow meter and suggest the nature	**07**
Q.4	**(a)**	Explain the operation of multiplexing and de-multiplexing and indicate their application	**07**
	(b)	Draw and explain the function of Strip chart and X-Y recorders.	**07**
		OR	
Q.4	**(a)**	Explain the basic mechanism of recording and reproduction of an analog voltage signal by means of a magnetic tape	**07**
	(b)	Give the classification of signals and explain any four in detail.	**07**
Q.5	**(a)**	Write a detail on types of AC voltmeter and explain RMS responding AC voltmeter with necessary block diagram	**07**
	(b)	Describe Electrodynamics Vibration Transducer.	**07**
		OR	
Q.5	**(a)**	Define measurement, Instrument, Instrumentation and Calibration. Explain the need of measurement, in detail.	**07**
	(b)	What is meant by cold junction compensation and how is it effected in industrial environment	**07**

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