Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1720310 **Date: 08-12-2014**

Subject Name: Industrial Measurements

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Draw neat sketches and diagram wherever necessary.**

Q.1	**(a)**	What is calibration? Also discuss calibration hierarchy. A pressure gauge of range 0-20 bar is stated to have an error of +/- 0.25 bar when calibrated by the manufacturer. Calculate the % error on the basis of maximum scale value. What would be the possible error as a % of the indicated value when a reading of 5 bar is obtained in a test?	**07**
	(b)	State the advantages of Electrical transducer over mechanical transducer. Explain Piezo electric transducer in detail.	**07**
Q.2	**(a)**	Brief about selection of Instrument Transducer. List out the static and dynamic characteristics of instruments.	**07**
	(b)	What is Cv in context of control valve? Brief about various flow characteristics of Control valve.	**07**
		OR	
	(b)	Brief about (i) Smart Transmitter and (ii) Current to Pneumatic Converter	**07**
Q.3	**(a)**	Explain working, types, measuring device of thermocouple. What is cold junction compensation (CJC)?	**07**
	(b)	Differentiate absolute pressure and gauge pressure. Explain working of any one low pressure measurement gauge.	**07**
		OR	
Q.3	**(a)**	Brief about RTD with necessary equation. Also explain about 2-wire, 3-wire and 4-wire RTD configuration.	**07**
	(b)	Explain basic principle and working of Dead Weight Tester	**07**
Q.4	**(a)**	Comment on capacitive type level measurement for electrically conductive and non conductive liquid.	**07**
	(b)	Explain different types of strain gauges in detail.	**07**
		OR	
Q.4	**(a)**	Explain Ultrasonic Level Measurement and comment on its advantages and disadvantages.	**07**
	(b)	Explain LVDT itôs working principle, advantages, and disadvantages and application	**07**
Q.5	**(a)**	Elucidate selection criteria for Magnetic flow meter. Also explain its working with necessary equations and diagram.	**07**
	(b)	List different types of sensors for Force Measurement and explain about electric force transducers (Proving Ring).	**07**
		OR	
Q.5	**(a)**	Explain Coriolis type Mass Flow Meter in detail.	**07**
	(b)	Write short note on pH measurement.	**07**

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