Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) EXAMINATION – SUMMER 2019

Subject Code:2170913 **Date:10/05/2019**

Subject Name:Industrial Instrumentation

Time:02:30 PM TO 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.**

			MARKS
Q.1	**(a)**	Differentiate between active and passive transducer with example.	**03**
	(b)	Write the formula of Gauge Factor for resistive strain gauge. Explain how poison's ratio, dimensions and specific resistance contribute to Gage Factor.	**04**
	(c)	Explain construction and working of optical pyrometer with its advantages and disadvantages.	**07**
Q.2	**(a)**	Explain how pressure can be measured with LVDT.	**03**
	(b)	Explain how cold junction compensation is done in thermocouple.	**04**
	(c)	Explain how angular displacement of shaft can be measured using Hall effect principle.	**07**
		OR	
	(c)	Explain working of four arm active Wheatstone bridge circuit employed for strain measurement considering two arms experiencing tension and other two arms experiencing compression.	**07**
Q.3	**(a)**	Enlist methods of torque measurement. Explain any one of them in brief.	**03**
	(b)	Explain how the level can be measured by air purge system.	**04**
	(c)	Write short note on Ultrasonic flow meter.	**07**
		OR	
Q.3	**(a)**	State principle of operation and construction of RTD.	**03**
	(b)	Enlist different types of load cells. Briefly explain any one of them.	**04**
	(c)	Write a note on Ultrasonic level detector.	**07**
Q.4	**(a)**	Explain how level can be measured using capacitive principle.	**03**
	(b)	Draw the schematic of X-Y recorder.	**04**
	(c)	Explain optical encoder principle used for shaft speed measurement.	**07**
		OR	
Q.4	**(a)**	Describe working of sample and hold circuit.	**03**
	(b)	Briefly explain working of Pirani Gauge.	**04**
	(c)	Write a note on modern digital data acquisition system.	**07**
Q.5	**(a)**	Explain working of electromagnetic type flow meter.	**03**
	(b)	Explain how calibration of pressure gauge is carried out.	**04**
	(c)	Explain basic requirement of transducer system.	**07**
		OR	
Q.5	**(a)**	Explain how Venturi tube used for flow measurement.	**03**
	(b)	Briefly explain working of McLeod gauge.	**04**
	(c)	Explain the following characteristics of a Transducer. (i)Precision (ii) Resolution (iii) Sensitivity (iv) Threshold (v) Repeatability (vi) Fidelity (vii) Drift	**07**

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