Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (New) EXAMINATION – WINTER 2018

Subject Code:2130903 Date:05/12/2018

Subject Name:Electrical Measurement and Measuring Instruments

Time:10:30 AM TO 01:00 PM 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)**	Define the following terms: i) Resolution, ii) Sensitivity, iii) Threshold	**03**
	(b)	Define error and classify it in detail.	**04**
	(c)	Define transducer and explain transducer selection factors.	**07**
Q.2	**(a)**	Explain advantages and limitations of Wheatstone's bridge.	**03**
	(b)	Derive the generalized equation for bridge balance condition of an a.c. bridge with necessary diagram.	**04**
	(c)	Describe the principle and characteristics of LVDT with necessary diagram.	**07**
		OR	
	(c)	Write a technical note on : Hall effect transducer.	**07**
Q.3	**(a)**	List advantages of digital voltmeter.	**03**
	(b)	Compare analog and digital instruments.	**04**
	(c)	Explain Maxwell's bridge with necessary bridge balance equation and vector diagram.	**07**
		OR	
Q.3	**(a)**	Explain important features of a power analyzer.	**03**
	(b)	Write a technical note on : Electronic Multimeter.	**04**
	(c)	Draw the circuit diagram of Kelvin's double bridge used to measure low resistance. Also derive its bridge balance condition.	**07**
Q.4	**(a)**	Define : i) Active transducer ii) Passive transducer iii) Inverse transducer	**03**
	(b)	Explain piezoelectric transducer.	**04**
	(c)	Explain the construction and working of moving iron meter. Derive its torque equation.	**07**
		OR	
Q.4	**(a)**	Describe the use of multiplier in voltmeters.	**03**
	(b)	Compare Moving coil and Moving iron instruments.	**04**
	(c)	Derive the equation for gauge factor of a resistive strain gauge in terms of Poisson's ratio.	**07**
Q.5	**(a)**	Why PMMC instruments cannot be used for a.c. measurements?	**03**
	(b)	Explain advantages and disadvantages of instrument transformers.	**04**
	(c)	Define Telemetry. Explain with necessary block diagram the basic telemetry system.	**07**
		OR	
Q.5	**(a)**	Explain objective and requirements of recording data.	**03**
	(b)	Explain principle of operation of basic strip chart recorder.	**04**
	(c)	Explain the use of single wattmeter in measurement of 3-phase power.	**07**

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