Seat No.:_____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 2130903 Date: 3/12/2019

Subject Name: Electrical Measurement and Measuring Instruments

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)**	Explain CT and PT.	**03**
	(b)	Explain electrodynamometer type wattmeter.	**04**
	(c)	Explain Maxwell's inductance-capacitance bridge for measurement of inductance. Derive bridge balance equation and draw vector diagram.	**07**
Q.2	**(a)**	What is a transducer? Give classifications of transducer.	**03**
	(b)	Explain LVDT.	**04**
	(c)	Derive the bridge balance equation of anderson's bridge and also provide advantages, dis-advantages & limitations of it.	**07**
		OR	
	(c)	Derive the bridge balance equation of hay's bridge and also provide advantages & dis-advantages of it.	**07**
Q.3	**(a)**	Explain block diagram of a general telemetry system.	**03**
	(b)	Explain principle of operation of thermo couple instrument.	**04**
	(c)	Describe the constructional detail of attraction type moving iron instruments with help of diagram. Also derive equation of deflection if spring control is used.	**07**
		OR	
Q.3	**(a)**	State the applications of power analyzers.	**03**
	(b)	Explain controlling systems used in an instrument.	**04**
	(c)	Derive the equation for gauge factor of a resistive strain gauge in terms of Poisson's ratio.	**07**
Q.4	**(a)**	Define the following terms: i) Accuracy, ii) Sensitivity, iii) Threshold	**03**
	(b)	Explain any one pressure measurement techniques in detail.	**04**
	(c)	Explain construction, working advantages and disadvantages of RTD with neat diagram.	**07**
		OR	
Q.4	**(a)**	Explain DMM with schematic diagram.	**03**
	(b)	Explain the various effects with which deflecting torque is produced.	**04**
	(c)	Describe digital storage oscilloscope with schematic block diagram and state its applications.	**07**
Q.5	**(a)**	Define drift, sensitivity and true value.	**03**
	(b)	Explain the term "Total harmonic distortion'' and describe Tuned circuit harmonic analyzer.	**04**
	(c)	Prove that deflection of electrodynamometer type wattmeter is proportional to power consumed.	**07**
		OR	
Q.5	**(a)**	Explain the loss of charge method for measurements of high resistance.	**03**
	(b)	Distinguish clearly between accuracy and precision.	**04**
	(c)	Explain construction and working of Megger.	**07**

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