Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code: 3160915 Date: 22-05-2025

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Explain principle and construction of Thermocouple.	**03**
	(b)	Explain (i) Active and Passive transducers (ii) Transducers and Inverse transducers with suitable examples.	**04**
	(c)	State and Explain Static characteristics of measuring Instruments.	**07**
Q.2	**(a)**	State methods for measurements of low resistances. Explain any one in detail.	**03**
	(b)	Explain loss of charge method of measurement of high resistance.	**04**
	(c)	Explain measurement of unknown capacitance with the help of Schering bridge. Also draw phasor diagram.	**07**
		OR	
	(c)	Explain working of Kelvin's double bridge for measurement of low resistance with a neat diagram.	**07**
Q.3	**(a)**	Explain pressure sensing devices.	**03**
	(b)	Describe the various types of errors in the measurement system.	**04**
	(c)	Describe the working principle of Hall effect transducers. Also state its applications.	**07**
		OR	
Q.3	**(a)**	What are the criteria for selection of the transducer?	**03**
	(b)	Explain instrument range extended by Instrument Transformers.	**04**
	(c)	Describe constructions and operating principles of electrodynamometer type wattmeter.	**07**
Q.4	**(a)**	What is the basic working principle of moving iron instruments?	**03**
	(b)	Draw & explain construction of PMMC instruments.	**04**
	(c)	Explain measurement of unknown inductance with the help of Hay's bridge. Also draw phasor diagram.	**07**
		OR	
Q.4	**(a)**	What are the forces or torque required for the operation of the measuring Instruments?	**03**
	(b)	Explain instrument used for the measurement of power factor.	**04**
	(c)	Explain any one transducer used for measurement of Displacement.	**07**
Q.5	**(a)**	State transducers used for measurement of Capacitance. Explain any one.	**03**
	(b)	Explain Clamp on meter.	**04**
	(c)	Explain construction and working principle of Megger.	**07**
		OR	
Q.5	**(a)**	Draw circuit diagram of Maxwell's Inductance bridge.	**03**
	(b)	Explain different types of digital display.	**04**

(c) Describe the principle of working and block diagram of a digital storage oscilloscope **07**

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