Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2022

Subject Code:2141003 Date:29-06-2022

Subject Name:Electronics Measurement and Instrumentation

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)**	Define: (1) Accuracy (2) Precision (3) Sensitivity	**03**
	(b)	Describe systematic errors in detail.	**04**
	(c)	Describe the classification of Standards in detail	**07**
Q.2	**(a)**	A Maxwell bridge is used to measure inductive impedance. The Bridge constants are : C1=0.01μF,R1=470kΩ,R2=5.1kΩ and R3=100kΩ Find the equivalent of the unknown impedance.	**03**
	(b)	What are the applications and limitations of Wheatstone Bridge?	**04**
	(c)	Draw the circuit diagram of Hay's Bridge and derive the equation for R_x and L_x.	**07**
		OR	
	(c)	Find the series equivalent inductance and resistance of the network that causes an opposite angle (Hay bridge) to null with the following bridge arms. ω=3000 rad/sec,R_2=10kΩ,R_1=2 kΩ ,C_1=1 μF,R_3=1 kΩ	**07**
Q.3	**(a)**	Just draw the block diagram of basic CRO.	**03**
	(b)	With diagram explain the working principle of AF sine and square wave generator.	**04**
	(c)	With diagram and waveforms explain the working of Horizontal deflection system of CRO in detail.	**07**
		OR	
Q.3	**(a)**	With diagram explain the working of basic wave analyzer.	**03**
	(b)	Explain resistive transducers in detail.	**04**
	(c)	With diagram explain the working principle of Dual Trace CRO.	**07**
Q.4	**(a)**	Explain random errors in detail.	**03**
	(b)	With diagram explain the working of sweep generator.	**04**
	(c)	Draw the block diagram of a Function generator and explain the function of each block in detail.	**07**
		OR	
Q.4	**(a)**	What are the advantages of an electrical transducer?	**03**
	(b)	What are the parameters an electrical transducer must have?	**04**
	(c)	With diagram and waveforms explain the working principle of spectrum analyzer in detail.	**07**
Q.5	**(a)**	Explain gross errors in detail.	**03**
	(b)	Draw the diagram of Schering's bridge and derive the equation for R_x and C_x.	**04**

	(c)	Explain linear variable differential transducer (LVDT) in detail with necessary diagrams.	**07**

OR

Q.5	**(a)**	Just draw the circuit diagram of Wien's bridge .Why we use Wien's bridge?	**03**
	(b)	With diagram explain single channel data acquisition system.	**04**
	(c)	With diagram explain the principle of Piezo electrical transducer.	**07**

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