Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–III EXAMINATION – WINTER 2025

Subject Code:3131706 Date:15-12-2025

Subject Name: Measurement and 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)**	Enlist various types of instrument in measurement. Discuss any one of them.	**03**
	(b)	Define error. Discuss various types of errors in measurement.	**04**
	(c)	Discuss the basic principle of PMMC instrument. Explain its construction with its merits and demerits.	**07**
Q.2	**(a)**	"All accurate instrument must be precise". State true or false. Justify your answer.	**03**
	(b)	Discuss loading effect in voltmeter.	**04**
	(c)	Draw & discuss the block diagram of Digital Multimeter (DMM).	**07**
		OR	
	(c)	Draw block diagram of CRO. Explain each of its block in detail with its front panel control.	**07**
Q.3	**(a)**	Discuss LCD in brief.	**03**
	(b)	Draw & discuss Wien's bridge circuit diagram along with its application.	**04**
	(c)	Draw Wheatstone bridge circuit and derive its balance equation. Also mention its advantages and disadvantages.	**07**
		OR	
Q.3	**(a)**	How to use 7-segment LED as an alphanumeric display?	**03**
	(b)	Explain the mechanism to extend the range of ammeters.	**04**
	(c)	Draw Anderson bridge circuit and discuss its application for the inductance measurement.	**07**
Q.4	**(a)**	Discuss the factors affecting intensity of light beam on CRO screen.	**03**
	(b)	Discuss the significance of Lissajous pattern in oscilloscope for the measurement of various parameters.	**04**
	(c)	Draw & discuss the block diagram of Digital Storage Oscilloscope (DSO).	**07**
		OR	
Q.4	**(a)**	Draw & discuss the bridge used to measure low value of resistance.	**03**
	(b)	Discus the single-phase power measurement.	**04**
	(c)	Explain various types of interference signals and their elimination techniques in AC sources.	**07**
Q.5	**(a)**	Discuss the principle of energy meter.	**03**
	(b)	Give the difference between CT (Current transformer) and PT (Potential transformer)	**04**
	(c)	Write a short note on: Function generator	**07**
		OR	
Q.5	**(a)**	Discuss the significance of harmonic analyzer along with its basic principle of operation.	**03**
	(b)	Discuss the basic principle of oscillator.	**04**
	(c)	Write a short note on: RS 232C standard	**07**

****