

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2023****Subject Code:3132405****Date:16-01-2024****Subject Name:Measurement & 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 transducer and give the broad classification of transducer.	03
	(b) Explain working principle of Oscilloscope with suitable block diagram.	04
	(c) Explain working principle of Permanent Magnet Moving Coil based measurement instrument.	07
Q.2	(a) Draw only diagram of Analog AC voltmeter.	03
	(b) Explain the procedure to measure time & frequency in oscilloscope.	04
	(c) Explain current transformer and potential transformer in detail.	07
	OR	
	(c) Explain sample and hold circuit and it's important.	07
Q.3	(a) Explain how Venturi tube used for flow measurement.	03
	(b) Discuss principle of LVDT used to measure displacement.	04
	(c) Explain the principle of 3-Phase wattmeter for 3-phase power measurement.	07
	OR	
Q.3	(a) Explain working principle of strain gauge.	03
	(b) Explain working principle dynamometer type instrument.	04
	(c) Explain Maxwell's inductance bridge.	07
Q.4	(a) Give the classification and applications of display device.	03
	(b) Explain drawbacks of mechanical instruments over electronics instruments.	04
	(c) Enlist & explain pressure measurement transducers.	07
	OR	
Q.4	(a) Draw and explain block diagram of digital storage oscilloscope.	03
	(b) Differentiate Active & Passive transducer.	04
	(c) Explain application wise use of temperature sensor like thermocouple, thermistor and RTD.	07
Q.5	(a) Give the general idea about Thermistor.	03
	(b) Write a short note on methods of A/D conversion.	04
	(c) Explain with neat diagram the working of digital voltmeter.	07
	OR	
Q.5	(a) Define (1) Accuracy (2) Sensitivity (3) Dead Zone.	03
	(b) Write short note on Pirani gauge.	04
	(c) Explain capacitive level measurement transducer. Support your answer with diagrams.	07
