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**GUJARAT TECHNOLOGICAL UNIVERSITY**

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

**Subject Code: 3132405**

**Date: 28/11/2019**

**Subject Name: Measurement & Instrumentation**

**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
<b>Q.1</b> (a) Define (1) Accuracy (2) Sensitivity (3) Dead Zone	<b>03</b>
(b) Differentiate Active & Passive transducer.	<b>04</b>
(c) Explain working principle of Permanent Magnet Moving Coil based measurement instrument.	<b>07</b>
<b>Q.2</b> (a) Draw only diagram of Analog AC voltmeter.	<b>03</b>
(b) Explain the procedure for extending range of ammeter.	<b>04</b>
(c) Write a note on: Digital Volt Meter.	<b>07</b>
<b>OR</b>	
(c) Discuss the usefulness of CT & PT for measurement.	<b>07</b>
<b>Q.3</b> (a) Draw internal construction of oscilloscope.	<b>03</b>
(b) Discuss Digital Oscilloscope in brief.	<b>04</b>
(c) Draw & discuss block diagram of signal conditioning.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Explain the use of voltage & current probes in oscilloscope.	<b>03</b>
(b) Explain the procedure to measure time & frequency in oscilloscope.	<b>04</b>
(c) Discuss the circuit used to converter analog quantity into digital (A/D converter).	<b>07</b>
<b>Q.4</b> (a) Enlist the requirement of signal conditioning in measurement.	<b>03</b>
(b) Discuss characteristics of digital display.	<b>04</b>
(c) Explain the principle of 3-Phase wattmeter for 3-phase power measurement.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Discuss in brief: sample & hold circuit.	<b>03</b>
(b) Classify display devices & explain any one in brief.	<b>04</b>
(c) Explain working principle of LCR meter with necessary block diagram.	<b>07</b>
<b>Q.5</b> (a) Discuss the principle of thermopile.	<b>03</b>
(b) Discuss (1) Thermistor (2) Thermocouple	<b>04</b>
(c) Explain capacitive level measurement transducer. Support your answer with diagrams.	<b>07</b>
<b>OR</b>	
<b>Q.5</b> (a) Draw only diagram of optical pyrometer used to measure temperature.	<b>03</b>
(b) Discuss principle of LVDT used to measure displacement.	<b>04</b>
(c) Enlist & explain pressure measurement transducers.	<b>07</b>

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