

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-III (NEW) EXAMINATION – WINTER 2024

Subject Code:3132405

Date:26-11-2024

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

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|------------|--|-----------|
| Q.1 | (a) Explain true RMS voltmeter. | 03 |
| | (b) Explain basic construction of PMMC instruments. | 04 |
| | (c) Give classification of transducers and differentiate between active and passive transducers. | 07 |
| Q.2 | (a) Explain visual errors in measurement for analog meters. | 03 |
| | (b) Explain utilization of CT and PT for measurement. | 04 |
| | (c) Define reproducibility, dead zone, accuracy, aging, and sensitivity. | 07 |
| | OR | |
| | (c) Write a note on dynamic characteristics of instruments. | 07 |
| Q.3 | (a) Write a short note on LCR meter. | 03 |
| | (b) Differentiate between analog and digital electrical energy meters. | 04 |
| | (c) Discuss and explain digital storage oscilloscope (DSO). | 07 |
| | OR | |
| Q.3 | (a) Explain shunt and multipliers w.r.t. analog voltmeter and ammeter. | 03 |
| | (b) Explain flow measurement and control using block diagram. | 04 |
| | (c) Define stress and strain. Describe its measurement. | 07 |
| Q.4 | (a) State various important oscilloscope controls with respect to front panel. | 03 |
| | (b) Explain Analog to Digital conversion. | 04 |
| | (c) Explain two wattmeter measurement method for 3 phase power measurement. | 07 |
| | OR | |
| Q.4 | (a) Explain frequency measurement. | 03 |
| | (b) Explain modulation and demodulation. | 04 |
| | (c) Explain Lissajous patterns. Also state their importance and use. | 07 |
| Q.5 | (a) Explain importance and use of Sample and Hold circuit. | 03 |
| | (b) Describe various digital display elements. | 04 |
| | (c) Explain principles and applications of temperature measurement. | 07 |
| | OR | |
| Q.5 | (a) State the methods for measurement of capacitance. | 03 |
| | (b) Explain piezo electric transducers. | 04 |
| | (c) Write note on measurement of displacement. | 07 |
