18/74

III Year B.Tech, EEE, I-Semester

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ELECTRICAL MEASUREMENTS & INSTRUMENTATION LAB

Course Objectives:

- To calibrate LPF Watt Meter, energy meter, power factor using electro dynamo meter type instrument as the standard instrument
- To determine unknown inductance, resistance, capacitance by performing experiments on D.C Bridges & A. C Bridges
- To determine three phase active & reactive powers using single wattmeter method practically
- To determine the ratio and phase angle errors of current transformer and potential transformer.

The following experiments are required to be conducted as compulsory experiments:

1. Crompton D.C. Potentiometer–Calibration of PMMC ammeter and PMMC voltmeter.
2. Calibration of dynamometer power factor meter.
3. Calibration LPF wattmeter – by Phantom testing.
4. Measurement of 3-Phase reactive power with single-phase wattmeter.
5. Calibration and Testing of single phase energy Meter.
6. Kelvin's double Bridge – Measurement of resistance.
7. Schering bridge & Anderson bridge.
8. Measurement of displacement with the help of LVDT.

In addition to the above eight experiments, at least any TWO of the experiments from the following list are required to be conducted

9. Measurement of 3-phase power with single watt meter and two CTs.
10. Dielectric oil testing using H.T. testing Kit.
11. C.T. testing using mutual Inductor – Measurement of % ratio error and phase angle of given CT by Null method.
12. PT testing by comparison – V. G. as Null detector – Measurement of % ratio error and phase angle of the given PT
13. Resistance strain gauge – strain measurements and Calibration.
14. Transformer turns ratio measurement using AC bridges.
15. Measurement of % ratio error and phase angle of given CT by Silsbee's method.

Course Outcomes: After completion of this lab the student is able to

1. Calibrate the PMMC type Voltmeters , Ammeters, LPF wattmeter, energy meter and dynamometer type power factor meter
2. Determine the Low Resistance, Inductance, Capacitance
3. Test the Instrument transformers and methods of indicating dielectric strength and turns ratio of a transformer.
4. Measure the three phase active and reactive power using watt meters.
5. Identifying the use of transducers and measurement of Non-Electrical Quantities.
6. Apply the conceptual thing to real world electrical and electronics problems and applications

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