

**EE604PC: POWER SYSTEMS LAB****B.Tech. III Year II Sem.**

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**Prerequisite:** Power Systems & Electrical Machines**Course Objectives:**

- perform testing of CT, PT's and Insulator strings
- To find sequence impedances of 3- $\Phi$  synchronous machine and Transformer
- To perform fault analysis on Transmission line models and Generators.

**Course Outcomes:** After completion of this lab, the student will be able to

- Perform various load flow techniques
- Understand Different protection methods
- Analyze the experimental data and draw the conclusions.

**The following experiments are required to be conducted as compulsory experiments:****Part - A**

1. Characteristics of IDMT Over Current Relay.
2. Differential protection of 1- $\Phi$  transformer.
3. Characteristics of Micro Processor based Over Voltage/Under Voltage relay.
4. Testing of CT, PT's and Insulator strings.
5. Finding the sequence impedances of 3- $\Phi$  synchronous machine.
6. Finding the sequence impedances of 3- $\Phi$  Transformer.

**In addition to the above six experiments, at least any four of the experiments from the following list are required to be conducted.****Part - B**

1. Formation of  $Y_{BUS}$ .
2. Load Flow Analysis using Gauss Seidal (GS) Method.
3. Load Flow Analysis using Fast Decoupled (FD) Method.
4. Formation of  $Z_{BUS}$ .
5. LG, LL and 3- $\Phi$  fault analysis of 3- $\Phi$  synchronous machine.
6. Power circle diagrams of a 3- $\Phi$  transmission line model.
7. ABCD constants and Regulation of a 3- $\Phi$  transmission line model.

8. Transient Stability Analysis for Single Machine connected to Infinite Bus by Point by Point method.

**Reference Books:**

1. C.L. Wadhwa: Electrical Power Systems –Third Edition, New Age International Pub. Co., 2001.
2. Hadi Sadat: Power System Analysis –Tata Mc Graw Hill Pub. Co. 2002.
3. D. P. Kothari: Modern Power System Analysis-Tata Mc Graw Hill Pub. Co. 2003.