

Power Systems Lab

Prerequisite: Power Systems & Electrical Machines

Course Objectives:

1. To understand the performance characteristics of various relays like IDMT Over current relay, over voltage/ under voltage relays and differential relays.
2. To find sequence impedances of 3- Φ synchronous machine and Transformer and fault analysis of generator.
3. To simulate the formation of Y and Z bus using MATLAB simulation.
4. To perform Load flow analysis using GS and FD methods

Part - A (Compulsory)

1. Testing of CT, PT and Insulator string.
2. ABCD constants, Regulation and Efficiency of a 3- ϕ transmission line model
3. Characteristics of IDMT over current relay.
4. Sequence impedances of 3- ϕ synchronous machine.
5. Characteristics of over voltage and under voltage relay.
6. Differential protection of 1- ϕ transformer.
7. Sequence impedances of 3- ϕ transformer.
8. LG, LL, LLG and 3- ϕ fault analysis of 3- ϕ synchronous machine.

(13) *Reddy*

(14) *Raj*

(15) *Raj*

Part - B (Any TWO from the following list)

9. Formation of y_{bus} and z_{bus} .
10. Load flow analysis using Gauss Seidal (GS) method.
11. Load flow analysis using Fast Decoupled (FD) method.
12. Transient stability analysis for single machine connected to infinite bus by point by point method.

(16) *R. Balasubramanyam*

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

1. Understand operation of CT, PT and Insulator string.
2. Understand Different protection relays.
3. Understand the process of finding sequence impedance of generator and transformer.
4. Understand different fault analysis on generator.
5. Understand the formation of y_{bus} and z_{bus} with MATLAB simulation.
6. Understand the load flow analysis using GS method and FD method.

1) *N. Mallesh*

5)

(9) *Reddy*

2) *S. Balasubramanyam*

6) *Reddy*

(10) *Raj*

3) *Raj*

7) *Reddy*

(11) *Raj*

4) *S. Balasubramanyam*

8) *Raj*

(12) *G. Anand*