POWER SYSTEM & SIMULATION LAB – I

Course Code:13EE2109 **L P C**
0 3 2

Pre requisites: Power System Analysis, Power System Operation & Control

Course Educational Objectives:

1. To design and conduct experiments on various power system components-analyze and interpret data.
2. To give hands on experience in using modern software tools for simulation of various power system controls.

Course Outcomes: At the end of this lab, the student will be able to

1. Analyze and interpret data on various power system components.
2. Simulate the characteristics of various power system control using modern software tools.

LIST OF EXPERIMENTS

1. Develop a program to solve Swing Equation.
2. Determination of Sub-Transient Reactance of a Salient Pole Machine.
3. Study and testing of over current and over voltage relay in Generator protection system with IDMT relay characteristics.
4. Develop a Simulink model for a single area load frequency problem and simulate the same.
5. Write a program to find Y-bus & Z-bus
6. Determination of the parameters of synchronous machine by using digital oscilloscope.
7. Simulate a transmission line and find I.Ferranti effect, II. Efficiency
8. Transient Stability analysis of a typical power system by using MiPower.

9. Design a PID controller.
10. Fault Analysis of 3 phase alternator
    i) LG Fault
    ii) LL Fault
    iii) LLG Fault
    iv) LLLG Fault

Text Books:

1. Allen J.Wood and Bruce F.Wollenberg, "*Power Generation, Operation and Control*", 2nd Edition, John Wiley & Sons Inc, 1996.

2. Olle E.Elgerd, "*Electrical Energy Systems Theory – An introduction*" 2nd Edition, Tata McGraw Hill, 1983.

3. Hadi Saadat, "*Power System Analysis* ", Second Edition , TMH Publication New Delhi.

4. D. P. Kothari and J. S. Dhillon, "*Power System Optimization*", Second Edition-PHI Learning Private Limited- 2011.