IV B.Tech I Semester

15AEE57-POWER SYSTEMS AND SIMULATION LAB

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Course Objectives:

This course enables the students to:

- *Acquire skills of using computer packages MATLAB coding and SIMULINK in Electrical and Electronics Engineering.*
- *Identify, formulate, and solve engineering problems.*
- *Understand the Relay Operating Characteristics.*

Conduct any 10 experiments from the following:

1. Operating Characteristics of Over Current-Relay
2. Operating Characteristics of Differential Relay
3. Operating Characteristics of phase sequence Relay
4. Operating Characteristics of micro processer based Over Voltage Relay
5. Determination of sequence reactance of 3-Φ Alternator
6. Simulation of Y-Bus Using Matlab
7. Simulation of Power Flow Using Gauss-Seidel Method for the 3-Bus System
8. Economic Load Dispatch For Thermal Plant Simulation
9. Determine the State Space Model for a Two Loop Electrical Network and Find the Transfer Function using Matlab
10. Write a Program to find the Time Response Specifications for a Given Second Order System
11. Write a Script File to Determine the Real Power, Reactive Power and Power Factor for the Given AC Circuit.
12. Write A Program To Verify The Maximum Power Transfer Theorem And Observe The Variation of Power with Load Resistance.
13. Simulate and obtain wave forms of an Synchronous generator for a given fault.
14. Simulate and obtain power factor improvement using synchronous condenser.
15. Simulate and observe sequence impedance for a Synchronous generator.

Course Outcomes:

The students will have ability to

- *Apply knowledge of mathematics, science, and engineering.*
- *Design and conduct experiments, as well as to analyze and interpret results.*
- *Understand the impact of engineering solutions in a global perspective.*

Reference Books

1. Modeling and Simulation using MATLAB-Simulink by Dr. Shailendra Jain, John Wiley India Pvt Ltd.
2. MATLAB An Introduction with Applications by Amos Gilat, John Wiley India Pvt Ltd.
3. Fundamentals of Power Electronics with MATLAB by Randall Shaffer, Firewall Media,Laxmi Publications.

V. Jeva
BOS-chairman