POWER SYSTEMS AND SIMULATION LAB

Course Objectives:

- Familiarize the students with the simulation of electrical power systems
- Analyze and interpret data on various power system components

Course Outcomes (COs):

Upon completion of this course, the students will be able to:

CO1: Simulate and analyze power flow and load frequency control problems of a power systems

CO2: Simulate and analyze circuits and power electronic systems

CO3: Determine optimal power generation & losses of a power system

CO4: Determine dielectric strength of transformer oil

LIST OF EXPERIMENTS

1. Simulation of transient response of RLC circuits

a. Response to pulse input

b. Response to step input

c. Response to sinusoidal input

2. Analysis of three phase circuit representing the generator, transmission line and load. Plot three phase currents & neutral current.

3. Simulation of single–phase full converter and single phase AC voltage controller

4. Dielectric strength of Transformer oil

5. Load flow studies using G-S method.

6. Load flow studies using NR method

7. Load frequency control without integral controller

8. Load frequency control with Integral controller

9. Economic load dispatch without losses

10. Economic load dispatch with losses

Additional Experiments

1. Transient stability analysis of single machine infinite bus system
2. Sequence impedances of 3 phase Alternator by Direct method

List of Major Equipment and cost:

S. No.	Item Description	Quantity	Total Cost (Rs.)
1	HP Pro 3330 MT Desktop PC Core i3 2nd Generation Processor H61 Chipset Dos, Mouse, keyboard 18.5 LED Monitor 2 GB, RAM, 500GB HDD.	35	8,92,150.00
2	Casio XJ V1 LED Projector	1	47,000.00
	Liberty 8"*6" Instalock Screen, 3ft Celling Mounting kit Power &VGA Cable 15 Mts	1	7,000.00
3	UPS: Model-ACCENTA S.L.No.A100497209 Capacity:10000VA, Input: 230VA Outout: 230VA, Battery:240VDC	1	2,00,000.00
4	Batteries:12V, 42AH	20	68,500.00
5	PSCAD Software	25 Users	1,31,250.00
6	Mipower Software	5 Users	3,90,000.00
TOTAL			**17,35,900.00**