

DEPARTMENT OF ELECTRICAL ENGINEERING

GOVERNMENT POLYTECHNIC, BARGARH



LESSON PLAN

ELECTRICAL CIRCUIT LAB (PR 2)

3RD SEMESTER

ELECTRICAL ENGINEERING

DEPARTMENT OF ELECTRICAL ENGINEERING

VISION:

To produce Electrical Engineer professionals who can contribute for socio-economic and technological development to meet global needs.

MISSION:

M1 - To strengthen academic infrastructure leading to quality professional by using modern technical tools and technologies.

M2 - To impart innovative knowledge among the students and make more industry-institution programs to make them successful professionals for serving the society.

M3 - To provide a learning environment to improve problem solving abilities, leadership abilities, ethical responsibilities and lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Apply electrical engineering knowledge and practical skills to solve well-defined engineering problems using modern tools and techniques.

PEO2: Perform effectively in industry and society as competent junior engineer, supervisors, or entrepreneurs with ethical and sustainable engineering practices.

PEO3: Demonstrate teamwork, communication, leadership, and project management skills in professional engineering activities.

PEO4: Engage in lifelong learning and adapt to emerging technologies for career growth and higher education.

PROGRAM SPECIFIC OUTCOMES

The electrical diploma engineers will be able to:

PSO1:-Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate engineering problems of electric circuits, analog and digital electronics, control system, electrical machines and power system.

PSO2:- Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in life-long learning and to successfully adapt in multidisciplinary environments.

PSO3:-Work professionally in power systems engineering, Electrical machinery and electrical circuit.

Class No.	Experiment No.	Topics / Experiment to be Covered
1	—	Introduction to Laboratory, Safety Precautions, Syllabus Discussion and Familiarization with Instruments
2	1	Determine Active, Reactive and Apparent Power in R-L-C Series Circuit and Draw Phasor Diagram
3	2	Create Resonance in Series R-L-C Circuit using Variable Frequency Supply/Variable Inductor or Capacitor
4	3	Determine Current, Power Factor, Active, Reactive and Apparent Power in R-L-C Parallel Circuit
5	4	Create Resonance in Parallel R-L-C Circuit using Variable Frequency Supply/Variable Inductor or Capacitor
6	Viva-I	Viva on AC Series and Parallel Circuits (Experiments 1–4)
7	5	Determine Line and Phase Quantities in Balanced Three-Phase Star and Delta Connected Loads
8	6	Determine Branch Current using Mesh Analysis
9	7	Determine Branch Current using Node Analysis
10	8	Verify Superposition Theorem
11	9	Verify Thevenin's Theorem
12	10	Verify Norton's Theorem
13	11	Verify Maximum Power Transfer Theorem
14	Viva-II	Viva on Network Theorems (Experiments 5–11)
15	12	Solve Circuit using Node Voltage Method in MATLAB Simulink
16	13	Solve Circuit using Mesh Current Method in MATLAB Simulink
17	14	Determine AC Voltage and Current Response of R, L and C Circuit using Simulink
18	15	Create Resonance in Series R-L-C Circuit using Simulink
19	16	Verify Network Theorems using Simulink/Simscape
20	—	Repeat Experiments and Record Verification
21	—	Completion of Pending Experiments
22	—	Mock Practical Examination
23	—	Practical Revision
24	—	End Semester Practical Examination Preparation