

DEPARTMENT OF ELECTRICAL ENGINEERING
GOVERNMENT POLYTECHNIC, BARGARH



LESSON PLAN

ELECTRICAL CIRCUIT (TH 2)

3RD SEMESTER

ELECTRICAL ENGINEERING

PREPARED BY SMT. PRITEE P. MINZ

SR. LECTURER (ELECTRICAL)

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.

DISCIPLINE: ELECTRICAL Engg.	SEMESTER: 3rd	NAME OF THE TEACHING FACULTY: Pritee Prava Minz, Sr. Lecturer (EE)
SUBJECT: ELECTRICAL CIRCUITS (TH 2)	NO. OF DAYS/ WEEK CLASS ALLOTTED – 45 Hrs SEMESTER FROM DATE: 14.07.2025 to 15.11.2025	
WEEK	CLASS DAY	THEORY TOPICS
1	1	Single Phase A.C Series Circuits: Generation of alternating voltage
	2	Phasor representation of sinusoidal quantities
	3	R, L, C circuit elements its voltage and current response
2	4	Impedance, reactance, Impedance triangle, Power factor, active power, reactive power, apparent power of R-L A.C series circuit
	5	Impedance, reactance, Impedance triangle, Power factor, active power, reactive power, apparent power of R-C A.C series circuit
	6	Impedance, reactance, impedance triangle, Power factor, active power, reactive power, apparent power of R-L-C A.C series circuit
3	7	Power triangle and vector diagram, Resonance, Bandwidth, Quality factor and voltage magnification in series R-L, R-C, R-L-C circuit.
	8	Single Phase A.C Parallel Circuits: R-L, R-C and R-L-C parallel combination of A.C. circuits
	9	Impedance, reactance, phasor diagram, impedance triangle, Power factor, active power, apparent power, reactive power, power triangle of R-L parallel circuit.
4	10	Impedance, reactance, phasor diagram, impedance triangle, Power factor, active power, apparent power, reactive power, power triangle of R-C parallel circuit.
	11	Impedance, reactance, phasor diagram, impedance triangle, Power factor, active power, apparent power, reactive power, power triangle of R-L-C parallel circuit.
	12	Resonance in parallel R-L circuit
5	13	Resonance in parallel R-C circuit
	14	Resonance in parallel R-L-C circuit
	15	Bandwidth, Quality factor and voltage magnification
6	16	Three Phase Circuits: Phasor and complex representation of three phase supply
	17	Phase sequence and polarity, Types of three-phase connections
	18	Phase and line quantities in three phase star system
7	19	Phase and line quantities in three phase delta system
	20	Balanced and unbalanced load
	21	Neutral shift in unbalanced load
8	22	Three phase power, active, reactive and apparent power in star system
	23	Three phase power, active, reactive and apparent power in delta system
	24	Network Reduction and Principles of Circuit Analysis: Source transformation
9	25	Star/delta transformation
	26	delta/star transformation
	27	Mesh Analysis
10	28	Node Analysis
	29	Network Theorems: Superposition theorem
	30	Numerical on Superposition theorem
11	31	Thevenin's theorem
	32	Numerical on Thevenin's theorem
	33	Norton's theorem
12	34	Numerical on Norton's theorem
	35	Maximum power transfer theorem
	36	Numerical on Maximum power transfer theorem
13	37	Reciprocity Theorem
	38	Two Port Network:

		Open Circuit Impedance Parameters
	39	Short Circuit Parameters
14	40	Admittance Parameters
	41	Transmission Parameters Hybrid Parameters
	42	Hybrid Parameters
15	43	Interrelationship of Two Port Network
	44	Inter Connection of Two Port Network
	45	Inter Connection of Two Port Network
16	46	Performance Test II
	47	Revision
Signature of the Subject Teacher Signature of the HOD		