DEPARTMENT OF ELECTRICAL ENGINEERING

GOVERNMENT POLYTECHNIC, BARGARH

LESSON PLAN

CIRCUIT AND NETWORK THEORY (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: **EE**	SEMESTER: **3rd**	NAMEOFTHETEACHINGFACULTY: Pritee Prava Minz,Sr.Lecturer(EE)
SUBJECT: **Circuit and Network Theory**		NO. OF DAYS/ WEEK CLASS ALLOTTED-75

WEEK	CLASS DAY	THEORY TOPICS
1ST	01	**MAGNETICCIRCUITS** Introduction to magnetic circuit through suitable example
	02	Magnetizing force, Intensity, MMF, flux and their relations
	03	Permeability, reluctance and permeance
	04	Analogy between electric and Magnetic Circuits
	05	B-H Curve
2ND	06	Series & parallel magnetic circuit.
	07	Hysteresis loop
	08	**COUPLEDCIRCUITS:** Self Inductance and Mutual Inductance
	09	Conductively coupled circuit and mutual impedance
	10	Dot convention, Coefficient of coupling
3RD	11	Series and parallel connection of coupled inductors.
	12	Solve numerical problems on magnetic circuit
	13	**CIRCUITELEMENTSANDANALYSIS:** Active, Passive, Unilateral & bilateral, Linear & Nonlinear elements
	14	Mesh Analysis, Mesh Equations by inspection
	15	Super mesh Analysis
4TH	16	Nodal Analysis, Nodal Equations by inspection
	17	Super node Analysis.
	18	Source Transformation Technique
	19	**NETWORKTHEOREMS:** Star to delta and delta to star transformation
	20	Super position Theorem
5TH	21	Solve numerical problems on Super position Theorem
	22	Thevenin's Theorem
	23	Maximum power Transfer Theorem.
	24	Solve numerical problems on Thevenin's Theorem And Maximum power Transfer Theorem.
	25	Norton's Theorem
6TH	26	Solve numerical problems on Norton's Theorem
	27	**ACCIRCUIT ANDRESONANCE:** A.C. through R-L, R-C & R-L-C Circuit
	28	Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.
	29	Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits
	30	Power factor &power triangle.
7TH	31	Deduce expression for active, reactive, apparent power.
	32	Derive the resonant frequency of series resonance and parallel Resonance circuit
	33	Define Bandwidth, Selectivity & Q-factor in series circuit

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	34	Solve numerical problems on series resonance and parallel resonance circuit
	35	**POLYPHASECIRCUIT** Concept of poly-phase system and phase sequence
8TH	36	Relation between phase and line quantities in star & delta connection
	37	Power equation in 3-phase balanced circuit.
	38	Solve numerical problems
	39	Measurement of 3-phase power by two wattmeter method.
	40	Solve numerical problems.
9TH	41	**TRANSIENTS:** Steady state & transient state response.
	42	Response to R-L circuit under DC condition.
	43	Response to R-C circuit under DC condition.
	44	Response to RLC circuit under DC condition.
	45	Solve numerical problems.
10TH	46	Solve numerical problems.
	47	**TWO-PORTNETWORK:** Open circuit impedance (z) parameters
	48	Short circuit admittance (y) parameters
	49	Transmission (ABCD) parameters
	50	Hybrid (h) parameters.
11TH	51	Interrelationships of different parameters.
	52	T and π representation.
	53	Solve numerical problems.
	54	Solve numerical problems.
	55	**FILTERS:** Define filter Classification of pass Band, stop Band and cut-off frequency.
12TH	56	Classification of filters. Constant –K low pass filter.
	57	Constant –K high pass filter.
	58	Constant–K Band pass filter.
	59	Constant–K Band elimination filter.
	60	Solve Numerical problems
13TH	61	Revision of chapter1.
	62	Revision of chapter2.
	63	Revision of chapter2
	64	Revision of chapter3
	65	Revision of chapter3
14TH	66	Revision of chapter4
	67	Revision of chapter4
	68	Revision of chapter5
	69	Revision of chapter5
	70	Revision of chapter6
15TH	71	Revision of chapter6
	72	Revision of chapter7
	73	Revision of chapter8
	74	Revision of chapter8
	75	Revision of chapter9

15/2/23 - EM17 - 3rd sem