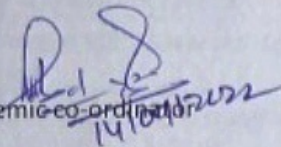# LESSON PLAN FOR Circuit and Network Theory [Th2]
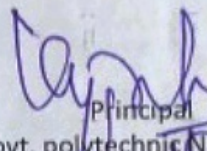
Discipline: Electrical Engineering	Semester:3rd	Name of the Teaching Faculty: PRADOSH KUMAR PANDA (LECT. IN ELECTRICAL ENGINEERING)
Subject: Circuit and Network Theory	Numbers of classes per week:5	Semester from date: 15/09/2022 to date:22/12/2022
		No. of weeks: 13

week	Class day	Theory
		1.MAGNETIC CIRCUITS
1st	1st	1. 1 Introduction
	2nd	1. 2 Magnetizing force, Intensity, MMF, flux and their relations
	3rd	1. 3 Permeability, reluctance and permeance
	4th	1. 4 Analogy between electric and Magnetic Circuits
	5th	Tutorial
2nd	1st	1. 5 B-H Curve 1. 6 Series & parallel magnetic circuit
	2nd	1. 7 Hysteresis loop
		2. COUPLED CIRCUITS
	3rd	2. 1 Self Inductance and Mutual Inductance
	4th	2. 2 Conductively coupled circuit and mutual impedance
	5th	Tutorial
3rd	1st	2. 3 Dot convention 2. 4 Coefficient of coupling
	2nd	2. 5 Series and parallel connection of coupled inductors. 2. 6 Solve numerical problems
		3. CIRCUIT ELEMENTS AND ANALYSIS:
	3rd	3. 1 Active, Passive, Unilateral & bilateral, Linear & Nonlinear elements
	4th	3. 2 Mesh Analysis, Mesh Equations by inspection
	5th	Tutorial
4th	1st	3. 3 Super mesh Analysis 3. 4 Nodal Analysis, Nodal Equations by inspection
	2nd	3. 5 Super node Analysis. 3. 6 Source Transformation Technique
	3rd	3. 7 Solve numerical problems
		4. NETWORK THEOREMS:
	4th	4.1 Star to delta and delta to star transformation
	5th	Tutorial
5th	1st	4.2 Super position Theorem
	2nd	4.3 Thevenin's Theorem
	3rd	4.4 Norton's Theorem
	4th	4.5 Maximum power Transfer Theorem.
	5th	Tutorial

6th	1st	4.6 Solve numerical problems
		5. AC CIRCUIT AND RESONANCE:
	2nd	5.1 A.C. through R-L, R-C & R-L-C Circuit
	3rd	5.2 Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.
	4th	5.3 Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits
	5th	Tutorial
7th	1st	5.4 Power factor & power triangle. 5.5 Deduce expression for active, reactive, apparent power.
	2nd	5.6 Derive the resonant frequency of series resonance and parallel resonance circuit
	3rd	5.7 Define Bandwidth, Selectivity & Q-factor in series circuit.
	4th	5.8 Solve numerical problems
	5th	(Tutorial)
8th		**6. POLYPHASE CIRCUIT**
	1st	6.1 Concept of poly-phase system and phase sequence
	2nd	6.2 Relation between phase and line quantities in star &connection
	3rd	6.2 Relation between phase and line quantities in delta connection
	4th	6.3 Power equation in 3-phase balanced circuit.
	5th	(Tutorial)
9th	1st	6.4 Solve numerical problems
	2nd	6.5 Measurement of 3-phase power by two wattmeter method.
	3rd	6.6 Solve numerical problems.
		7. TRANSIENTS:
	4th	7.1 Steady state & transient state response.
	5th	Tutorial
10th	1st	7.1 Steady state & transient state response(contd.)
	2nd	7.2 Response to R-L, R-C & RLC circuit under DC condition.
	3rd	7.2 Response to R-L, R-C & RLC circuit under DC condition.(contd.)
	4th	7.3 Solve numerical problems
	5th	Tutorial
11th		**8. TWO-PORT NETWORK:**
	1st	8.1 Open circuit impedance (z) parameters
	2nd	8.2 Short circuit admittance (y) parameters
	3rd	8.3 Transmission (ABCD) parameters
	4th	8.4 Hybrid (h) parameters
	5th	(Tutorial)

	1st	8.5 Inter relationships of different parameters.
	2nd	8.6 T and π representation.
12th	3rd	8.7 Solve numerical problems
		9. FILTERS:
	4th	9.1 Define filter
	5th	Tutorial
	1st	9.2 Classification of pass Band, stop Band and cut-off frequency. 9.3 Classification of filters.
13 th	2nd	9.4 Constant – K low pass filter. 9.5 Constant – K high pass filter.
	3rd	9.6 Constant – K Band pass filter. 9.7 Constant – K Band elimination filter.
	4th	9.8 Solve Numerical problems
	5th	Tutorial

Hod 14/09/2022
Electrical Engg.

Academic co-ordinator 14/09/2022

Principal
Govt. polytechnic Nabarangpur

3