

**BHUBANANANDA ORISSA SCHOOL OF ENGINEERING, CUTTACK**

**DEPARTMENT OF ELECTRICAL ENGINEERING**

**LESSON PLAN**



**SUBJECT : CIRCUIT AND NETWORK THEORY**

**ACADEMIC SESSION: 2024-25**

**FACULTY : TWINKLE PATTNAIK**

**SEMESTER:3<sup>RD</sup> ,SECTION: A**

Discipline: <b>Electrical Engg.</b>	Semester: <b>3<sup>rd</sup> (A)</b>	Name of the teaching faculty: <b>TWINKLE PATTNAIK</b>
Subject-Circuit & Network Theory( <b>TH-2</b> )	No. of Days/per week class allotted: <b>05 PERIODS/WEEK</b> <b>(MON-1,,THU-2.FRI-2,Period Each)</b>	Semester: From Date: <b>01/07/2024</b> To Date: <b>08/11/2023</b> No. of weeks: <b>18 WEEKS</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory/Practical Topics</b>
1 <sup>st</sup> (01/07/2024-06/07/2024)	01/07/2024	<b>1.MAGNETIC CIRCUIT</b> 1 .1 Introduction 1 .2 Magnetizing force, Intensity, MMF, flux and their relations
	04/07/2024	1 .3 Permeability, reluctance and permeance.
	04/07/2024	1 .4 Analogy between electric and Magnetic Circuits
	05/07/2024	1 .5 B-H Curve
	05/07/2024	1 .6 Series & parallel magnetic circuit.
2 <sup>nd</sup> (08/07/2024-13/07/2024)	08/07/2024	1 .7 Hysteresis loop
	11/07/2024	<b>2.COUPLED CIRCUIT</b> 2 .1 Self Inductance and Mutual Inductance
	11/07/2024	2 .2 Conductively coupled circuit and mutual impedance
	12/07/2024	2 .3 Dot convention
	12/07/2024	2 .4 Coefficient of coupling 2 .5 Series and parallel connection of coupled inductors.

3 <sup>rd</sup> (15/07/2024-20/07/2024)	15/07/2024	2 . 6 Solve numerical problems
	18/07/2024	2 . 6 Solve numerical problems
	18/07/2024	2 . 6 Solve numerical problems
	19/07/2024	2 . 6 Solve numerical problems
	19/07/2024	<b>3. CIRCUIT ELEMENTS AND ANALYSIS:</b> 3 . 1 Active, Passive, Unilateral & bilateral, Linear & Non linear elements
4 <sup>th</sup> (22/07/2023-27/07/2024)	22/07/2024	3 . 2 Mesh Analysis, Mesh Equations by inspection
	25/07/2024	3 . 3 Super mesh Analysis
	25/07/2024	3 . 4 Nodal Analysis, Nodal Equations by inspection
	26/07/2024	3 . 5 Super node Analysis.
	26/07/2024	3 . 6 Source Transformation Technique
5 <sup>th</sup> (29/07/2024-03/08/2024)	29/07/2024	3 . 7 Solve numerical problems (With Independent Sources Only)
	01/08/2024	3 . 7Solve numerical problems (With Independent Sources Only)
	01/08/2024	3 . 7Solve numerical problems (With Independent Sources Only)
	02/08/2024	3 . 7Solve numerical problems (With Independent Sources Only)
	02/08/2024	3 . 7Solve numerical problems (With Independent Sources Only)
6 <sup>th</sup> (05/08/2024-10/08/2024)	05/08/2024	<b>CLASS TEST-1</b>
	08/08/2024	<b>4. NETWORK THEOREMS:</b> 4.1 Star to delta and delta to star transformation
	08/08/2024	4.2 Super position Theorem
	09/08/2024	4.3 Thevenin's Theorem
	09/08/2024	4.4 Norton's Theorem

7 <sup>th</sup> (12/08/2024-17/08/2024)	12/08/2024	4.5 Maximum power Transfer Theorem
	16/08/2024	4.6 Solve numerical problems (With Independent Sources Only)
	16/08/2024	4.6 Solve numerical problems (With Independent Sources Only)
8 <sup>th</sup> (19/08/2024-24/08/2024)	22/08/2024	4.6 Solve numerical problems (With Independent Sources Only)
	22/08/2024	4.6 Solve numerical problems (With Independent Sources Only)
	23/08/2024	<b>5. AC CIRCUIT AND RESONANCE:</b> 5.1 A.C. through R-L, R-C & R-L-C Circuit
	23/08/2024	<b>5. AC CIRCUIT AND RESONANCE:</b> 5.1 A.C. through R-L, R-C & R-L-C Circuit
9 <sup>th</sup> (26/08/2024-01/09/2024)	29/08/2024	5.2 Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.
	29/08/2024	5.3 Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.
	30/08/2024	5.4 Solution of problems of A.C. through R-L, R-C & R-L-C parallel & CompositeCircuits.
	30/08/2024	5.5 Solution of problems of A.C. through R-L, R-C & R-L-C parallel & CompositeCircuits.
10 <sup>th</sup> (02/09/2024-07/09/2024)	02/09/2024	5.6 Power factor & power triangle.
	05/09/2024	5.7 Deduce expression for active, reactive, apparent power.

	05/09/2024	5.8 Derive the resonant frequency of series resonance and parallel resonance circuit
	06/09/2024	5.9 Define Bandwidth, Selectivity & Q-factor in series circuit.
	06/09/2024	<b>5.10</b> Solve numerical problems.
11 <sup>th</sup> (09/10/2024-14/09/2024)	09/09/2024	<b>6. POLYPHASE CIRCUIT</b> 6.1 Concept of poly-phase system and phase sequence
	12/09/2024	<b>INTERNAL ASSESEMENT</b>
	13/09/2024	<b>INTERNAL ASSESEMENT</b>
12 <sup>th</sup> (16/09/2024-21/09/2024)	19/09/2024	6.2 Relation between phase and line quantities in star & delta connection 6.3 Power equation in 3-phase balanced circuit.
	19/09/2024	6.4 Solve numerical problems
	10/09/2024	6.5 Measurement of 3-phase power by two wattmeter method.
	20/09/2024	6.5 Measurement of 3-phase power by two wattmeter method.
13 <sup>th</sup> (23/09/2024-28/09/2024)	23/09/2024	6.6Solve numerical problems.
	26/09/2024	6.6Solve numerical problems.
	26/09/2024	<b>7.TRANSIENTS:</b>  <b>7.1</b> Steady state & transient state response.
	27/09/2024	7.2 Response to R-L, R-C & RLC circuit under DC condition.
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14 <sup>th</sup> (30/09/2024-05/10/2024)	30/09/2024	7.2 Response to R-L, R-C & RLC circuit under DC condition.
	03/10/2024	7.3Solve numerical problems
	03/10/2024	7.3Solve numerical problems
	04/10/2024	7.3Solve numerical problems
	04/10/2024	7.3Solve numerical problems
15 <sup>th</sup> (14/10/2024-19/10/2024)	14/10/2024	7.3Solve numerical problems
	17/10/2024	<b>CLASS TEST-2</b>
	17/10/2024	Discussion of class test
	18/10/2024	<b>8.TWO-PORT NETWORK:</b> 8.1Open circuit impedance (z) parameters
	18/10/2024	8.2Short circuit admittance (y) parameters
16 <sup>th</sup> (21/10/2024-26/10/2024)	21/10/2024	8.3Transmission (ABCD) parameters
	24/10/2024	8.4Hybrid (h) parameters. 8.5Inter relationships of different parameters.
	24/10/2024	8.6T and $\pi$ representation. 8.7Solve numerical problems
	25/10/2024	8.7Solve numerical problems
	25/10/2024	8.7Solve numerical problems
17 <sup>th</sup> (28/10/2024-02/11/2024)	28/10/2024	<b>9. FILTERS:</b> 9.1Define filter 9.2Classification of pass Band, stop Band and cut-off frequency.
	01/11/2024	9.3 Classification of filters. 9.4 Constant – K low pass filter.
	01/11/2024	9.5 Constant – K high pass filter.

		9.6 Constant – K Band pass filter.
18 <sup>th</sup> (04/11/2024-09/11/2024)	04/11/2024	9.7 Constant – K Band elimination filter. 9.7 Solve Numerical problems
	07/11/2024	9.7 Solve Numerical problems
	07/11/2024	9.7 Solve Numerical problems
	08/11/2024	<b>QUIZ TEST</b>
	08/11/2024	<b>REVISION</b>

