

AMR/EEE/BOS/2024-25/MOM/1

Date : 23-09-2024

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

MINUTES OF MEETING - BOARD OF STUDIES (BOS)

The Meeting of the Board of Studies of EEE was held on 23rd September 2024 at 02.30 PM through online (Zoom Meeting Platform). The following members were attended the online meeting.

S.No	Name of the Member	Designation/occupation	category	Signature
1	Dr. K Krishna Reddy	Head of the Department	Chairman	<i>K.K.Reddy</i>
2	Dr. K Venkata Reddy	Professor, EEE Department, UCEK, JNTUK, Kakinada	University Nominee	<i>K Venkata Reddy</i>
3	Dr. Mercy Rosilina	Professor, Vignan University, Vadlamudi, Guntur	Subject experts outside parent university	<i>Mercy Rosilina</i>
4	Dr. V Sandeep	Associate Professor, NIT AP		<i>V Sandeep</i>
5	Mr. M. L T Rayudu	Sr. Site Engineer, Indpower, Vishakhapatnam	Industrialist	<i>M.L.T Rayudu</i>
6	Dr.R.Simhachalam	Asst. Professor	Faculty Members	<i>R.Simhachalam</i>
7	Mr. G Masthan Reddy	Asst. Professor		<i>G Masthan Reddy</i>
8	Mr. B. Anji Babu	Asst. Professor		<i>B. Anji Babu</i>
9	Mr. R Koteswara Naik	Asst. Professor		<i>R. Koteswara Naik</i>
10	Mr. I. Anil Babu	Asst. Professor		<i>I. Anil Babu</i>
11	Mrs. R Usha	Goods Train Manager, Central Govt. Employee	Alumni Member	<i>R. Usha</i>

P.T.O.

The Meeting began with chairman, Board of studies extending a warm welcome to all the members of participating in the meeting.

The following points were discussed and approved during the meeting

1. University Nominee Dr. K Venkat Reddy Garu, congratulate the Management and Staff of A.M.Reddy Memorial College of Engineering and Technology.
2. The following proposed AMR 24 Course Structure and the detailed syllabi of I-I, I-II were presented, discussed and approved.

1. For Group – A (CSE , EEE)

GROUP –A – COURSES (CSE ,EEE)					
I Year – I SEM					
S.No.	Title	Credits	S. No.	Title	Credits
1	Communicative English	2	6	Communicative English Lab	1
2	Engineering Chemistry/Chemistry/Fundamental Chemistry	3	7	Engineering Chemistry/ Chemistry/Fundamental Chemistry Lab	1
3	Linear Algebra & Calculus	3	8	Engineering Workshop	1.5
4	Basic Civil & Mechanical Engineering	3	9	Computer Programming Lab	1.5
5	Introduction to Programming	3	10	Health and wellness, Yoga and Sports	0.5
I SEM - TOTAL CREDITS					20.5
I Year – II SEM					
1	Engineering Physics	3	6	IT Workshop	1
2	Differential Equations & Vector Calculus	3	7	Engineering Physics Lab	1
3	Basic Electrical and Electronics Engineering	3	8	Electrical and Electronics Engineering Workshop	1.5
4	Engineering Graphics	3	9	Data Structures Lab / Electrical Circuits Lab	1.5
5	Data Structures / Electrical Circuit Analysis – I (Branch specific)	3	10	NSS/NCC/Scouts & Guides/Community Service	0.5
II SEM - TOTAL CREDIT					19.5

2. For Group –B (ECE, CE, AGE, Cyber Security)

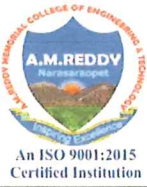
GROUP –B – COURSES (Cyber Security ,ECE,MECH,CE, AGE)					
I Year – I SEM					
S.No.	Title	Credits	S.No.	Title	Credits
1	Engineering Physics	3	6	IT Workshop	1
2	Linear Algebra & Calculus	3	7	Engineering Physics Lab	1
3	Basic Electrical & Electronics Engineering	3	8	Electrical & Electronics Engineering Workshop	1.5
4	Engineering Graphics	3	9	Computer Programming Lab	1.5
5	Introduction to Programming	3	10	NSS/NCC/Scouts & Guides/Community Service	0.5
I SEM - TOTAL CREDITS					20.5
I Year – II SEM					
1	Communicative English	2	6	Communicative English Lab	1
2	Engineering Chemistry / Chemistry / Fundamental Chemistry	3	7	Engineering Chemistry / Chemistry /Fundamental Chemistry Lab	1
3	Differential Equations & Vector Calculus	3	8	Engineering Workshop	1.5
4	Basic Civil & Mechanical Engineering	3	9	Engineering Mechanics & Building Practices Lab Engineering Mechanics Lab / Network Analysis and Simulation Lab / Data structures Lab	1.5
5	Engineering Mechanics/ Network Analysis / Data structures (Branch specific)	3	10	Health and wellness, Yoga and Sports	0.5
II SEM - TOTAL CREDITS					19.5

Resolutions:

Item – 1 – Proposed curriculum for 1st B.Tech is presented to verify the list of subjects in I Year – I Sem and II Sem.

Resolution: BOS members have decided to keep semester subjects same as per JNTUK . and detailed syllabus is approved by BOS . Syllabus of is as follows Basic Electrical & Electronics Engineering (T) (**Annexure -1**), Electrical And Electronics Engineering Workshop (L) (**Annexure -2**), Network Analysis (T) (**Annexure -3**), Network Analysis & Simulation Lab (L) (**Annexure -4**) , Electrical Circuit Analysis -1 (**Annexure-5**) , Electrical Circuit Lab (**Annexure-6**) in I year - I sem and II Sem.

Item -2 : Details of labs in I Year - I Sem and II Sem semester presented before BOS team



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Approved by AICTE, New Delhi, Affiliated to JNTU - Kakinada, Accredited by NAAC

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Resolution: BOS team decided to conduct labs after the completion of theory subject to get more knowledge and effective practical application.

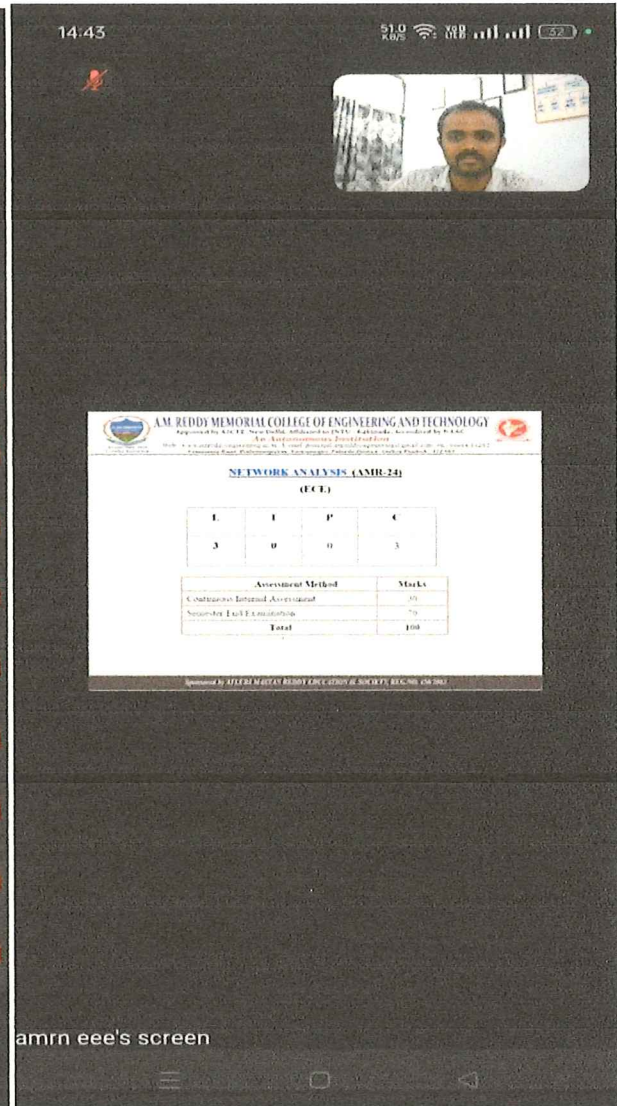
Item-3 – UG courses evaluation process is presented before BOS member

Resolution: BOS members discussed about the evaluation process and forwarded to Academic Council.

The following points were suggested for future possible implementations:

1. Suggested that we can change the syllabus upto 25% and 50% if necessary.
2. Suggested to enhance the quality as per industrial requirements.
3. Dr. V Sandeep, Subject expert suggested to prepare the course structure for all 4 years of B.Tech.
4. Suggested to change the syllabus from II year instead of I year as the students should know the fundamentals.

(Signature)



Copy to:

1. Principal
2. IQAC

K.K. Reddy
Chairman

BoS – Dept. of EEE
HEAD OF THE DEPARTMENT
ELECTRICAL AND ELECTRONICS ENGINEERING
A.M. REDDY MEMORIAL COLLEGE OF ENGG & TECH
PETLURIVARIPALEM
Narasaraopet (Md), Guntur (Dt).

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ANNEXURE – 1

AMR -24

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to All branches of Engineering)

L	T	P	C
3	0	0	3

Course Objectives

To expose to the field of electrical & electronics engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.

Course Outcomes: After the completion of the course students will be able to

CO-1 Describe fundamental laws, operating principles of motors/generators, MC/MI instruments (L2)

CO-2 Demonstrate the working of electrical machines, measuring instruments and power generation stations. (L2)

CO-3 Apply mathematical tools and fundamental concepts to derive various equations related to electrical circuits and machines. (L3)

CO-4 Calculate electrical load and electricity bill of residential and commercial buildings. (L4)

PART A: BASIC ELECTRICAL ENGINEERING

UNIT - I

DC & AC Circuits

DC Circuits: Electrical circuit elements (R, L and C), Ohm's Law and its limitations, KCL & KVL, series, parallel, series-parallel circuits, Super Position theorem, Simple numerical problems.

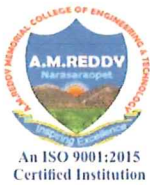
AC Circuits: A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor, Voltage and current relationship with phasor diagrams in R, L, and C circuits, Concept of Impedance, Active power, reactive power and apparent power, Concept of power factor (Simple Numerical problems).

UNIT - II

Machines and Measuring Instruments

Machines: Construction, principle and operation of (i) DC Motor, (ii) DC Generator, (iii) Single Phase Transformer, (iv) Three Phase Induction Motor and (v) Alternator, Applications of electrical machines.

Measuring Instruments: Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments and Wheat Stone bridge.



UNIT III

Energy Resources, Electricity Bill & Safety Measures

Energy Resources: Conventional and non-conventional energy resources; Layout and operation of various Power Generation systems: Hydel, Nuclear, Solar & Wind power generation.

Electricity bill: Power rating of household appliances including air conditioners, PCs, Laptops, Printers, etc. Definition of “unit” used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers

Equipment Safety Measures: Working principle of Fuse and Miniature circuit breaker(MCB), merits and demerits. Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.

Textbooks:

1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, Dhanpat Rai & Co, 2013
3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition.

Reference Books:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Mc Graw Hill, 2019, Fourth Edition
2. Principles of Power Systems, V.K. Mehtha, S.Chand Technical Publishers, 2020
3. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017
4. Basic Electrical and Electronics Engineering, S. K. Bhattacharya, Person Publications, 2018, Second Edition

Web Resources:

1. <https://nptel.ac.in/courses/108105053>
2. <https://nptel.ac.in/courses/108108076>

ANNEXURE – 2

AMR -24

ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

(Common to All branches of Engineering)

L	T	P	C
0	0	3	1.5

Course Objectives:

To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

Course Outcomes: After completion of this course, the student will be able to

- CO-1 Measure voltage, current and power in an electrical circuit. (L3)
- CO-2 Measure of Resistance using Wheat stone bridge (L4)
- CO-3 Discover critical field resistance and critical speed of DC shunt generators. (L4)
- CO-4 Investigate the effect of reactive power and power factor in electrical loads. (L5)

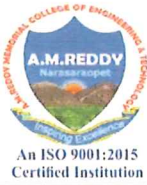
Activities:

1. Familiarization of commonly used Electrical & Electronic Workshop Tools: Bread board, Solder, cables, relays, switches, connectors, fuses, Cutter, plier, screwdriver set, wire stripper, flux, knife/blade, soldering iron, de-soldering pump etc.
 - Provide some exercises so that hardware tools and instruments are learned to be used by the students.
2. Familiarization of Measuring Instruments like Voltmeters, Ammeters, multimeter, LCR-Q meter, Power Supplies, CRO, DSO, Function Generator, Frequency counter.
 - Provide some exercises so that measuring instruments are learned to be used by the students.
3. Components:
 - Familiarization/Identification of components (Resistors, Capacitors, Inductors, Diodes, transistors, IC's etc.) – Functionality, type, size, colour coding package, symbol, cost etc.
 - Testing of components like Resistor, Capacitor, Diode, Transistor, ICs etc. - Compare values of components like resistors, inductors, capacitors etc with the measured values by using instruments

PART A: ELECTRICAL ENGINEERING LAB

List of experiments:

1. Verification of KCL and KVL
2. Verification of Superposition theorem
3. Measurement of Resistance using Wheat stone bridge
4. Magnetization Characteristics of DC shunt Generator
5. Measurement of Power and Power factor using Single-phase wattmeter
6. Measurement of Earth Resistance using Megger
7. Calculation of Electrical Energy for Domestic Premises



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Reference Books:

1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, Dhanpat Rai & Co, 2013
3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition

Note: Minimum Six Experiments to be performed

ANNEXURE – 3

AMR -24

NETWORK ANALYSIS (ECE & allied branches)

L	T	P	C
3	0	0	3

Course Objectives:

- To introduce basic laws, mesh & nodal analysis techniques for solving electrical circuits
- To impart knowledge on applying appropriate theorem for electrical circuit analysis
- To explain transient behaviour of circuits in time and frequency domains
- To teach concepts of resonance
- To introduce open circuit, short circuit, transmission, hybrid parameters and their interrelationship.

Course Outcomes: At the end of this course students will demonstrate the ability to

CO1: Understand basic electrical circuits with nodal and mesh analysis.

CO2: Analyse the circuit using network simplification theorems.

CO3: Find Transient response and Steady state response of a network.

CO4: Analyse electrical networks in the Laplace domain.

CO5: Compute the parameters of a two-port network.

UNIT I

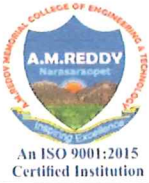
Types of circuit components, Types of Sources and Source Transformations, Mesh analysis and Nodal analysis, problem solving with resistances only including dependent sources also. Principal of Duality with examples.

Network Theorems: Thevenin's, Norton's, Milliman's, Reciprocity, Compensation, Substitution, Superposition, Max Power Transfer, Tellegens - problem solving using dependent sources also.

UNIT II

Transients: First order differential equations, Definition of time constants, R-L circuit, R-C circuit with DC excitation, evaluating initial conditions procedure, second order differential equations, homogeneous, non-homogenous, problem-solving using R-L-C elements with DC excitation and AC excitation, Response as related to s-plane rotation of roots.

Laplace transform: introduction, Laplace transformation, basic theorems, problem solving using Laplace transform, partial fraction expansion, Heaviside's expansions, problem solving using Laplace transform.



UNIT III

Steady State Analysis of A.C Circuits: Impedance concept, phase angle, series R-L, R-C, R-L-C circuits problem solving. Complex impedance and phasor notation for R-L, R-C, R-L-C problem solving using mesh and nodal analysis, Star-Delta conversion, problem solving using Laplace transforms also.

UNIT IV

Resonance: Introduction, Definition of Q, Series resonance, Bandwidth of series resonance, Parallel resonance, general case-resistance present in both branches, anti-resonance at all frequencies.

Coupled Circuits: Coupled Circuits: Self-inductance, Mutual inductance, Coefficient of coupling, analysis of coupled circuits, Natural current, Dot rule of coupled circuits, conductively coupled equivalent circuits- problem solving.

UNIT V

Two-port Networks: Relationship of two port networks, Z-parameters, Y-parameters, Transmission line parameters, h- parameters, Relationships Between parameter Sets, Parallel & series connection of two port networks, cascading of two port networks, problem solving using dependent sources also.

Image and iterative impedances. Image and iterative transfer constants. Insertion loss. Attenuators and pads. Lattice network and its parameters. Impedance matching networks.

Textbooks:

1. Network Analysis – ME Van Valkenburg, Prentice Hall of India, revised 3rd Edition, 2019.
2. Engineering Circuit Analysis by William H. Hayt, Jack Kemmerly, Jamie Phillips, Steven M. Durbin, 9th Edition 2020.
3. Network lines and Fields by John. D. Ryder 2nd Edition, PHI

Reference Books:

1. D. Roy Choudhury, Networks and Systems, New Age International Publications, 2013.
2. Joseph Edminister and Mahmood Nahvi, Electric Circuits, Schaum's Outline Series, 7th Edition, Tata McGraw Hill Publishing Company, New Delhi, 2017
3. Fundamentals of Electric Circuits by Charles K. Alexander and Matthew N. O. Sadiku, McGraw-Hill Education.

ANNEXURE – 4

AMR -24

NETWORK ANALYSIS AND SIMULATION LABORATORY

(ECE & allied branches)

L	T	P	C
0	0	3	1.5

Course Objectives:

- To gain hands on experience in verifying Kirchoff's laws and network theorems
- To analyze transient behavior of circuits
- To study resonance characteristics
- To determine 2-port network parameters

Course Outcomes:

CO1: Verify Kirchoff's laws and network theorems.

CO2: Measure time constants of RL & RC circuits.

CO3: Analyze behavior of RLC circuit for different cases.

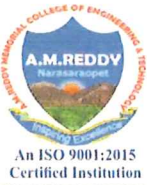
CO4: Design resonant circuit for given specifications.

CO5: Characterize and model the network in terms of all network parameters.

The following experiments need to be performed using both Hardware and simulation Software.

The experiments need to be simulated using software and the same need to be verified using the hardware.

1. Study of components of a circuit and Verification of KCL and KVL.
2. Verification of mesh and nodal analysis for AC circuits
3. Verification of Superposition, Thevenin's & Norton theorems for AC circuits
4. Verification of maximum power transfer theorem for AC circuits
5. Verification of Tellegen's theorem for two networks of the same topology.
6. Study of DC transients in RL, RC and RLC circuits
7. To study frequency response of various 1st order RL & RC networks
8. To study the transient and steady state response of a 2nd order circuit by varying its various parameters and studying their effects on responses
9. Find the Q Factor and Bandwidth of a Series and Parallel Resonance circuit.
10. Determination of open circuit (Z) and short circuit (Y) parameters
11. Determination of hybrid (H) and transmission (ABCD) parameters
12. To measure two port parameters of a twin-T network and study its frequency response.



Hardware Requirements:

Regulated Power supplies, Analog/Digital Function Generators, Digital Multimeters, Decade Resistance Boxes/Rheostats, Decade Capacitance Boxes, Ammeters (Analog or Digital), Voltmeters (Analog or Digital), Active & Passive Electronic Components

Software requirements:

Multisim / Pspice/Equivalent simulation software tool, Computer Systems with required specifications

References:

1. Network Analysis – ME Van Valkenburg, Prentice Hall of India, revised 3rd Edition, 2019.
2. Engineering Circuit Analysis by William H. Hayt, Jack Kemmerly, Jamie Phillips, Steven M. Durbin, 9th Edition 2020.

ANNEXURE – 5

AMR -24

ELECTRICAL CIRCUIT ANALYSIS –I (EEE & allied branches)

L	T	P	C
3	0	0	3

Course Objectives:

To develop an understanding of the fundamental laws, elements of electrical circuits and to apply circuit analysis to DC and AC circuits.

Course Outcomes:

CO1: Remembering the basic electrical elements and different fundamental laws.

CO2: Understand the network reduction techniques, transformations, concept of self-inductance and mutual inductance, phasor diagrams, resonance and network theorems.

CO3: Apply the concepts to obtain various mathematical and graphical representations.

CO4: Analyse nodal and mesh networks, series and parallel circuits, steady state response, different circuit topologies (with R, L and C components).

CO5: Evaluation of Network theorems, electrical, magnetic and single-phase circuits.

UNIT I

INTRODUCTION TO ELECTRICAL CIRCUITS

Basic Concepts of passive elements of R, L, C and their V-I relations, Sources (dependent and independent), Kirchoff's laws, Network reduction techniques (series, parallel, series - parallel, star-to-delta and delta-to-star transformation), source transformation technique, nodal analysis and mesh analysis to DC networks with dependent and independent voltage and current sources, node and mesh analysis.

UNIT II MAGNETIC CIRCUITS

Basic definition of MMF, flux and reluctance, analogy between electrical and magnetic circuits, Faraday's laws of electromagnetic induction – concept of self and mutual inductance, Dot convention – coefficient of coupling and composite magnetic circuit, analysis of series and parallel magnetic circuits.

UNIT III SINGLE PHASE CIRCUITS

Characteristics of periodic functions, Average value, R.M.S. value, form factor, representation of a sine function, concept of phasor, phasor diagrams, node and mesh analysis. Steady state analysis of R, L and C circuits to sinusoidal excitations-response of pure resistance, inductance, capacitance, series RL circuit, series RC circuit, series RLC circuit, parallel RL circuit, parallel RC circuit.



UNIT IV RESONANCE AND LOCUS DIAGRAMS

Series Resonance: Characteristics of a series resonant circuit, Q-factor, selectivity and bandwidth, expression for half power frequencies; Parallel resonance: Q-factor, selectivity and bandwidth; Locus diagram: RL, RC, RLC with R, L and C variables.

UNIT V NETWORK THEOREMS (DC & AC EXCITATIONS)

Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum Power Transfer theorem, Reciprocity theorem, Millman's theorem and compensation theorem

Textbooks:

1. Engineering Circuits Analysis, Jack Kemmerly, William Hayt and Steven Durbin, Tata Mc Graw Hill Education, 2005, sixth edition.
2. Network Analysis, M. E. Van Valkenburg, Pearson Education, 2019, Revised Third Edition

Reference Books:

1. Fundamentals of Electrical Circuits, Charles K. Alexander and Mathew N.O. Sadiku, Mc Graw Hill Education (India), 2013, Fifth Edition
2. Electric Circuits (Schaum's outline Series), Mahmood Nahvi, Joseph Edminister, and K. Rao, Mc Graw Hill Education, 2017, Fifth Edition.
3. Electric Circuits, David A. Bell, Oxford University Press, 2009, Seventh Edition.
4. Introductory Circuit Analysis, Robert L Boylestad, Pearson Publications, 2023, Fourteenth Edition.
5. Circuit Theory: Analysis and Synthesis, A. Chakrabarti, Dhanpat Rai & Co., 2018, Seventh Revised Edition.

Web Resources:

1. https://onlinecourses.nptel.ac.in/noc23_ee81/preview
2. <https://nptel.ac.in/courses/108104139>
3. <https://nptel.ac.in/courses/108106172>
4. <https://nptel.ac.in/courses/117106108>

ANNEXURE – 6

AMR -24

ELECTRICAL CIRCUITS LAB

(EEE & allied branches)

L	T	P	C
0	0	3	1.5

Course Objectives:

To impart hands on experience in verification of circuit laws and theorems, measurement of circuit parameters, study of circuit characteristics. It also gives practical exposure to the usage of different circuits with different conditions.

Course Outcomes:

CO1: Understand the concepts of network theorems, node and mesh networks, series and parallel resonance and Locus diagrams.

CO2: Apply various theorems to compare practical results obtained with theoretical calculations.

CO3: Determine self, mutual inductances and coefficient of coupling values, parameters of choke coil.

CO4: Analyse different circuit characteristics with the help of fundamental laws and various configurations.

CO5: Create locus diagrams of RL, RC series circuits and examine series and parallel resonance.

List of Experiments:

1. Verification of Kirchhoff's circuit laws.
2. Verification of node and mesh analysis.
3. Verification of network reduction techniques.
4. Determination of cold and hot resistance of an electric lamp
5. Determination of Parameters of a choke coil.
6. Determination of self, mutual inductances, and coefficient of coupling
7. Series and parallel resonance
8. Locus diagrams of R-L (L Variable) and R-C (C Variable) series circuits
9. Verification of Superposition theorem
10. Verification of Thevenin's and Norton's Theorems
11. Verification of Maximum power transfer theorem
12. Verification of Compensation theorem
13. Verification of Reciprocity and Millman's Theorems

Reference Books:

1. Engineering Circuits Analysis, Jack Kemmerly, William Hayt and Steven Durbin, Tata Mc Graw Hill Education, 2005, sixth edition.
2. Network Analysis, M. E. Van Valkenburg, Pearson Education, 2019, Revised Third Edition