RAGHU ENGINEERING COLLEGE

Autonomous

(Approved by AICTE, New Delhi, Accredited by NBA (CE,ECE, MECH, CSE), NAAC with 'A+' Grade & Permanently Affiliated to JNTU GV-Vizianagaram)

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Department of Electrical & Electronics Engineering

I Year II Semester:	**L**	**T**	**P**	**C**
Code: 2302201	**0**	**0**	**3**	**1.5**

ELECTRICAL CIRCUITS LAB

Preamble: This course is designed with the objective of expanding the student's knowledge in electrical circuits beyond the basic topics. It includes Network theorems, Transients Magnetically Coupled Circuits, Resonance, Locus diagrams and choke coil Parameters. This course would help students to explore the analysis of various electrical circuits.

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

CO1	Understand the concepts of node and mesh networks	L2
CO2	Apply various theorems to compare practical results obtained with theoretical calculations	L3
CO3	Determine self, mutual inductances and coefficient of coupling values, parameters of choke coil.	L3
CO4	Analyse different circuit characteristics with the help of fundamental laws and various configurations.	L4
CO5	Create locus diagrams of RL, RC series circuits and examine series and parallel resonance.	L5

Mapping of COs with POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**P010**	**PO11**	**P012**
CO1	2	2	2			1		2	2	2	1	1
CO2	2	2	2	1		1		2	2	2	1	1
CO3	2	2	3	1		1		2	2	2	1	1
CO4	2	2	2			1		2	2	2	1	1
CO5	2	1	2	1	1	1		2	2	2	1	1

1 – Weak, 2 – Moderate and 3 – Strong

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 resonance

8. Parallel resonance

9. Locus diagrams of R-L (L Variable) and R-C (C Variable) series circuits

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

Note : Minimum 10 experiments to be conducted

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