

NETWORK ANALYSIS AND SCIENTIFIC COMPUTING LABORATORY

III Semester: EEE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AEEC08	Core	L	T	P	C	CIA	SEE	Total
		1	0	2	2	30	70	100
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 36		Total Classes:36		
Prerequisite: Electrical Circuits, Linear Algebra and Calculus								
<p>I. COURSE OVERVIEW: Network analysis laboratory enables students in examining characteristics of DC and AC circuits, solution of differential equation, generation of three phase and complex wave forms using MATLAB, tools of LAB View, analysis of electrical circuits using LAB View.</p> <p>II. COURSE OBJECTIVES: The students will try to learn: I. Examine the relations between electrical quantities in complex electrical networks using MATLAB. II. Compute the performance of single phase and three phase circuits using Lab View.</p> <p>III. COURSE SYLLABUS:</p> <p>Week – 1: Introduction To MATLAB Check the symbols, tool kits and connections related to electrical circuits in MATLAB</p> <p>Week – 2: Transient Response of Series RL , RC And RLC Circuits Plot the time varying characteristics of series circuits using MATLAB</p> <p>Week – 3: Solving Differential Equations Obtain the solution of differential equation representing electric network using MATLAB</p> <p>Week – 4: Transfer Function of Electrical Circuit Determine the transfer function of electrical circuit using MATLAB</p> <p>Week – 5: Transient Response Of Parallel RL , RC And RLC Circuits Plot the time varying characteristics of parallel circuits using MATLAB</p> <p>Week – 6: Generation of Three Phase Wave Form Generate the three phase AC wave form for different phase differences and phase sequences using MATLAB</p> <p>Week – 7: Three phase measurements Determine the electrical quantities of three phase wave form using MATLAB</p> <p>Week – 8: Virtual instruments (vi) using Labview Editing and building a VI, creating a sub VI</p> <p>Week – 9: Generation of Common Wave Forms Using Labview Signal generation of triangular wave; saw tooth, square wave and display of wave form, minimum and maximum values of wave form and modulation</p> <p>Week – 10: Frequency measurement using Lissajous figures in Lab View Measure the frequency of unknown signal using Lissajious pattern in LAB View</p> <p>Week – 11: Structures Using Labview Using FOR loop, WHILE loop, charts and arrays, graph and analysis VIs.</p>								

Week – 12: Simulation of low pass and high pass filters using digital simulation

Plot the characteristics of low pass and high pass filters using MATLAB

Week – 13: Sensor Circuit Using LAB View

Design the electric and electronic circuit of sensor using LAB View

Week – 14: Proximity Sensor Using LAB View

Measure the speed of the machine with proximity sensor in LAB View

IV. REFERENCE BOOKS:

1. A Chakrabarti, "Circuit Theory", Dhanpat Rai Publications, 6th Edition, 2006.
2. William Hayt, Jack E Kemmerly S.M. Durbin, "Engineering Circuit Analysis", Tata McGraw Hill, 7th Edition, 2010.
3. K S Suresh Kumar, "Electric Circuit Analysis", Pearson Education, 1st Edition, 2013.

V. WEB REFERENCES:

1. <https://www.ee.iitkgp.ac.in>
2. <https://www.citchennai.edu.in>
3. <https://www.iare.ac.in/>