Course Plan

General Handout for all courses appended to the time table

Course No. : 22ECT36D	**Dept.: Electronics and Communication Engineering**
Course Title : Network Analysis	**Semester: III**
Instructor-in-charge : **Shashikiran R** **rkrshashikiran@ncetmail.com** **Rani B A** **rani.ba@ncetmail.com**	**Academic Year: 2023-24**
	Date: **16-11-2023**

Subject Description:

This interdisciplinary course introduces students to fundamental theories, concepts, methods and applications of network analysis in a practical manner. Students learn and practice hands-on skills in collecting, analyzing and visualizing network data.

Text Books:

1. M.E. Van Valkenberg (2000), "Network analysis", Prentice Hall of India, 3rd edition, 2000, ISBN: 9780136110958.
2. Roy Choudhury, "Networks and systems", 2nd edition, New Age International Publications, 2006, ISBN: 9788122427677.

REFERENCE BOOKS:

1. Hayt, Kemmerly and Durbin ―Engineering Circuit Analysis", TMH 7th Edition, 2010.
2. J. David Irwin /R. Mark Nelms, "Basic Engineering Circuit Analysis", John Wiley, 8th edition, 2006.

PREREQUISITES:

1. Basic knowledge of electronic circuits	Self-study	Remarks Students have completed this Courses.

LECTURE PLAN:

Topic	Topic Details	Number of Lectures	Unit/ Chapter Reference
Module– I **Basic Concepts**	Introduction, Practical sources.	1	T1 3.1
	Source transformations, Star – Delta transformation.	2	T1 3.2
	Loop analysis with linearly dependent and independent sources for DC networks.	3	T1 3.3
	Node analysis with linearly dependent and independent sources for DC networks.	4	T1 3.4.1
	Concepts of super node and super mesh.	5	T1 3.4.2
	Concepts of super node and super mesh.	6	T1 3.5
	Concepts of super node and super mesh.	7	T1 3.6
	Concepts of super node and super mesh.	8	T1 3.7
Module – II **Network Theorems**	Superposition Theorem	9	T2 5.1
	Thevenin‘s theorems	10	T2 5.1.1
	Thevenin‘s theorems	11	T2 5.1.2
	Norton‘s theorems.	12	T2 5.3
	Norton‘s theorems.	13	T2 5.4
	Maximum Power transfer theorem	14	T2 5.5
	Maximum Power transfer theorem	15	T2 5.6
	Millman‘s theorem.	16	T2 5.6.1
Revision			
AAT-1			

Module – III **Resonant Circuits**	Series Resonance	17	T2 6.4.1
	Parallel Resonance	18	T2 6.6, 6.7
	Frequency Response of Series circuits	19	T2 6.8.1
	Frequency Response of Parallel circuits	20	T2 6.8.3
	Q-Factor,	21	T2 6.8.2
	Bandwidth.	22	T2 6.9.1
	Problems on Series Resonance	23	
	Problems on Parallel Resonance	24	
Module– IV **Transient behavior and initial conditions**	Behavior of circuit elements under switching condition and their Representation,	25	T26.6
	Behavior of circuit elements under switching condition and their Representation	26	T2 6.7
	Behavior of circuit elements under switching condition and their Representation	27	T2 6.8.1
	Evaluation of initial and final conditions in RL circuits for DC excitations	28	T2 6.8.2
	Evaluation of initial and final conditions in RC circuits for DC excitations	29	T2 6.8.3
	Evaluation of initial and final conditions in RLC circuits for DC excitations	30	T2 6.9
	Applications of Laplace Transforms in circuit analysis.	31	T2 6.9.1
	Applications of Laplace Transforms in circuit analysis.	32	T2 6.9.2
Revision			
AAT-2			
Module – V **Sequential Two port network parameters**	Introduction	33	T1 8.1
	Open circuit impedance parameter	34	T18.2
	Short circuit admittance parameter	35	T18.2.1
	Hybrid parameters	36	T18.2.2
	Hybrid parameters	37	T18.3
	Transmission parameter	38	T18.4
	Transmission parameter	39	T18.5
	Relationship between parameters.	40	T18.5.1

Course Outcomes

At the end of the course the student will be able to:

CO1	Analyze currents and voltages in a circuit using network simplification techniques.
CO2	Determine the complex circuits using network theorems.
CO3	Simplify the series and parallel resonance circuits.
CO4	Apply simple DC circuit's concepts to transient conditions and to the Laplace's Transforms.
CO5	Solve the given network using specified two port network parameters like Z or Y or T or h and Evaluate frequency response related parameters through the RLC elements, in resonant circuits.

CO-PO MAPPING:

POS / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C202.1	3	1	3	2	2	-	-	-	-	-	1	1
C202.2	3	3	3	2	2	-	-	-	-	-	1	1
C202.3	3	2	3	2	1	-	-	-	-	-	1	1
C202.4	3	3	3	2	1	-	-	-	-	-	1	1
C202.5	2	2	3	3	1	-	-	-	-	-	1	1

Evaluation Scheme:

Evaluation Type		Component	Max Marks	Marks Reduced to	Min Marks	Evaluation Details
Theory Component	Internal Assessment Test(IATs)	IAT-1	25	25	20	Average of two IATs scaled down to 20 marks
		IAT-2	25			
	Comprehensive Continuous Evaluation(CCE)	CCE-1	25	25		Any two assessment methods as per 22OB42 of regulations , Average of two CCEs scaled down to 20 marks
		CCE-2	25			
	Total CIE-Theory			50	20	Scaled down marks of IAT and CCE to 25
SEE			100	50	18	Conducted for 100 marks and scaled down to 50.
CIE + SEE				100	40	

**CV, ME, ECE & ISE departments were accredited by NBA for 3 years*

Notices: All notices will be displayed on NCET and in Department website.
Chamber Consultation Hour: Wednesday 2:00Pm to 4:00 Pm
Makeup Policy: To be granted only in case of serious illness or emergency.
Email Policy: Communication through email. If you want to discuss anything, you are most welcome to meet me during chamber consultation hours or immediately after the class.
Academic queries/doubts can be posted in Moodle.

Mr. Shashikiran R/Mrs. Rani B A **Dr.Nagesh K N**

Course-in-charge **HOD**