



**Sri Indu Institute of
Engineering & Technology**

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COURSE FILE

ON

NETWORK ANALYSIS & TRANSMISSION LINES

Course Code - EC301PC

II B.Tech I-SEMESTER

A.Y.: 2022-2023

Prepared by

Mr. M.Nagaraju
Assistant Professor

Head of the Department
Electronics and Communication Engg. Dept
SRI INDU INSTITUTE OF ENGG & TECH
Sheriguda(V), Ibrahimpatnam(M), R.R.Dist-501 510

PRINCIPAL
Sri Indu Institute of Engineering & Tech.
Sheriguda(VIII), Ibrahimpatnam
R.R. Dist. Telangana-501 510.



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Academic Year	2022-2023
Course Title	NETWORK ANALYSIS & TRANSMISSION LINES
Course Code	EC302PC
Programme	B.Tech
Year & Semester	II year I-semester
Branch & Section	ECE-A
Regulation	R18
Course Faculty	Mr. M.Nagaraju, Assistant Professor

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INSTITUTE VISION AND MISSION

Vision:

To become a premier institute of academic excellence by providing the world class education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

Mission:

IM1: To offer outcome-based education and enhancement of technical and practical skills.

IM2: To Continuous assess of teaching-learning process through institute-industry collaboration.

IM3: To be a centre of excellence for innovative and emerging fields in technology development with state-of-art facilities to faculty and students' fraternity.

IM4: To Create an enterprising environment to ensure culture, ethics and social responsibility among the stakeholders.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

DEPARTMENT VISION AND MISSION

Vision:

To become a recognized center in the field of Electronics and Communication Engineering by producing creative engineers with social responsibility and address ever-changing global challenges.

Mission:

DM1: To facilitate an academic environment that enables student's centric learning.

DM2: To provide state-of-the-art hardware and software technologies to meet industry requirements.

DM3: To continuously update the Academic and Research infrastructure.

DM4: To Conduct Technical Development Programs for overall professional caliber of Stake Holders.

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PROGRAM EDUCATIONAL OBJECTIVES

Program Educational objectives are to Promote:

- PEO1:** Graduates with a strong foundation in Electronics and Communication Engineering, Science and Technology to become successful in the chosen professional career.
- PEO2:** Graduates with ability to execute innovative ideas for Research and Development with continuous learning.
- PEO3:** Graduates inculcated with industry based soft-skills to enable employability.
- PEO4:** Graduates demonstrate with ability to work in interdisciplinary teams and ethical professional behavior.

PROGRAM SPECIFIC OUTCOMES

- PSO 1: Design Skills:** Design, analysis and development a economical system in the area of Embedded system & VLSI design.
- PSO 2: Software Usage:** Ability to investigate and solve the engineering problems using MATLAB, Keil and Xilinx.

A handwritten signature in blue ink, appearing to be 'L. S. Rao'.

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A handwritten signature in green ink, appearing to be 'Sri Indu'.

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PROGRAM OUTCOMES

- 1. ENGINEERING KNOWLEDGE:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. PROBLEM ANALYSIS:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. DESIGN/DEVELOPMENT OF SOLUTIONS:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. MODERN TOOL USAGE:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- 6. THE ENGINEER AND SOCIETY:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. ENVIRONMENT AND SUSTAINABILITY:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. ETHICS:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. INDIVIDUAL AND TEAM WORK:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. COMMUNICATION:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.
- 11. PROJECT MANAGEMENT AND FINANCE:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12. LIFE-LONG LEARNING:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech. in ELECTRONICS AND COMMUNICATION ENGINEERING****COURSE STRUCTURE & SYLLABUS (R18)****Applicable From 2018-19 Admitted Batch****II YEAR I SEMESTER**

S. No.	Course Code	Course Title	L	T	P	Credits
1	EC301PC	Electronic Devices and Circuits	3	1	0	4
2	EC302PC	Network Analysis and Transmission Lines	3	0	0	3
3	EC303PC	Digital System Design	3	1	0	4
4	EC304PC	Signals and Systems	3	1	0	4
5	EC305ES	Probability Theory and Stochastic Processes	3	0	0	3
6	EC306PC	Electronic Devices and Circuits Lab	0	0	2	1
7	EC307PC	Digital System Design Lab	0	0	2	1
8	EC308ES	Basic Simulation Lab	0	0	2	1
9	*MC309	Constitution of India	3	0	0	0
		Total Credits	18	3	6	21

II YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	MA401BS	Laplace Transforms, Numerical Methods & Complex Variables	3	1	0	4
2	EC402PC	Electromagnetic Fields and Waves	3	0	0	3
3	EC403PC	Analog and Digital Communications	3	1	0	4
4	EC404PC	Linear IC Applications	3	0	0	3
5	EC405PC	Electronic Circuit Analysis	3	0	0	3
6	EC406PC	Analog and Digital Communications Lab	0	0	3	1.5
7	EC407PC	IC Applications Lab	0	0	3	1.5
8	EC408PC	Electronic Circuit Analysis Lab	0	0	2	1
9	*MC409	Gender Sensitization Lab	0	0	2	0
		Total Credits	15	2	10	21

***MC–Satisfactory/Unsatisfactory**

EC302PC : NETWORK ANALYSIS AND TRANSMISSION LINES

B. Tech. II Year I Sem.

L T P C

3 0 0 3

Pre-Requisites : Nil

Course Objectives:

- To understand the basic concepts on RLC circuits.
- To know the behavior of the steady states and transients states in RLC circuits.
- To understand the two port network parameters.
- To study the propagation, reflection and transmission of plane waves in bounded and unbounded media.

Course Outcomes: Upon successful completion of the course, students will be able to:

- Gain the knowledge on basic RLC circuits behavior.
- Analyze the Steady state and transient analysis of RLC Circuits.
- Know the characteristics of two port network parameters.
- Analyze the transmission line parameters and configurations.

UNIT-I

Network Topology, Basic cutset and tie set matrices for planar networks, Magnetic Circuits, Self and Mutual inductances, dot convention, impedance, reactance concept, Impedance transformation and coupled circuits, co-efficient of coupling, equivalent T for Magnetically coupled circuits, Ideal Transformer.

UNIT-II

Transient and Steady state analysis of RC, RL and RLC Circuits, Sinusoidal, Step and Square responses. RC Circuits as integrator and differentiators. 2nd order series and parallel RLC Circuits, Root locus, damping factor, over damped, under damped, critically damped cases, quality factor and bandwidth for series and parallel resonance, resonance curves.

UNIT-III

Two port network parameters, Z, Y, ABCD, h and g parameters, Characteristic impedance, Image transfer constant, image and iterative impedance, network function, driving point and transfer functions – using transformed (S) variables, Poles and Zeros. Standard T, π , L Sections, Characteristic impedance, image transfer constants, Design of Attenuators, impedance matching network.

UNIT-IV

Transmission Lines - I: Types, Parameters, Transmission Line Equations, Primary & Secondary Constants, Equivalent Circuit, Characteristic Impedance, Propagation Constant, Phase and Group Velocities, Infinite Line Concepts, Lossless / Low Loss Characterization, Types of Distortion, Condition for Distortion less line, Minimum Attenuation, Loading - Types of Loading.

UNIT-V

Transmission Lines- II: Input Impedance Relations, SC and OC Lines, Reflection Coefficient, VSWR. $\lambda/4$, $\lambda/2$, $\lambda/8$ Lines – Impedance Transformations, Smith Chart – Configuration and Applications, Single Stub Matching.

TEXT BOOKS:

1. Network Analysis and Transmission Lines by S Salivahanan
2. Network Analysis – Van Valken burg, 3rd Ed., Pearson, 2016.
3. Networks, Lines and Fields-JD Ryder, PHI, 2nd Edition, 1999

REFERENCE BOOKS:

1. Electric Circuits – J. Edminister and M. Nahvi – Schaum's Outlines, Mc Graw Hills Education, 1999.
2. Engineering Circuit Analysis–William Hayt and Jack E Kemmerly, MGH, 8th Edition, 1993.
3. Electro magnetic with Applications – JD. Kraus, 5th Ed., TMH
4. Transmission Lines and Networks – Umesh Sinha, Satya Prakashan, 2001, (Tech.India Publications), New Delhi.



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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

COURSE OUTCOMES

Course Name: Network Analysis & Transmission Lines (C212)

At the End of the course, student will be able to

CO No	DESCRIPTION
C212.1	Gain the knowledge on basic network elements and magnetic circuits.(Knowledge)
C212.2	Analyze the steady state and transient analysis of RLC circuits.(Analysis)
C212.3	Gain the knowledge on characteristics of two port network parameters (Z, Y, ABCD, h & g) (Knowledge)
C212.4	Gain the knowledge on network function, driving point and transfer functions using S-variables, poles and zeros) (Knowledge)
C212.5	Analyze the transmission line parameters. (Analysis)
C212.6	Analyze the transmission line configurations and applications. (Analysis)

COs and Mapping with PO's/PSO's

PO, PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	-	-	-	-	-	-	-	-	-	-	-	2
C212.2	3	3	-	-	2	-	-	-	-	-	-	1	-	-
C212.3	3	2	-	1	-	-	-	-	-	-	-	1	-	-
C212.4	2	3	-	-	-	-	-	-	-	-	-	-	-	-
C212.5	3	2	-	-	2	-	-	-	-	-	-	-	-	2
C212.6	3	-	2	-	-	-	-	-	-	-	-	-	-	2
	2.8	2.4	2	1	2	-	-	-	-	-	-	1	-	2



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CO- PO/PSO Mapping – Justification

COURSE NAME: Network Analysis & Transmission Lines (C212)

P01. ENGINEERING KNOWLEDGE: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

P02. PROBLEM ANALYSIS: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

P03. DESIGN/DEVELOPMENT OF SOLUTIONS: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

P04. CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

P05. MODERN TOOL USAGE: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

P12. LIFE-LONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PSO2. SOFTWARE USAGE: Ability to investigate and solve the engineering problems using MATLAB, Keil and Xilinx.

CO-PO mapping Justification

C212.1 : Gains the knowledge on basic network elements and magnetic circuits.

	Justification
PO1	Apply the knowledge of mathematics and science in network elements and magnetic circuits. (level 3)
PO2	Students can find network topology and behavior of network elements (level 2)
PSO2	Ability to investigate and solve the engineering problems using MATLAB, Keil and Xilinx.(level 2)

C212.2 : Analyze the steady state and transient analysis of RLC circuits.

	Justification
PO1	Apply the knowledge of engineering fundamentals (level 3)
PO2	Students can find R,L,C elements behavior in steady state and transient state (level 3)
PO5	Students able to create the different circuit designs (MATLAB). (level 2)
P12	Students able to apply different circuit configurations modern electrical system .(level 1)

C212.3 : Gain the knowledge on characteristics of two port network parameters (Z, Y, ABCD, h & g)

	Justification
PO1	Students get the knowledge on analyzing the periodic waveforms.(level 3)
PO2	Evaluating the Laplace transform techniques (level 2)
PO4	Students able to solve the problems on different circuit designs. (level 1)
P12	Students able to apply different circuit configurations modern electrical system .(level 1)

C212.4 : Gain the knowledge on network function, driving point and transfer functions using S-variables, poles and zeros)

	Justification
PO1	Student get the knowledge in of two port networks .(level 2)
PO2	Students calculate the network parameters for all types of networks. (level 3)

C212.5 : Analyze the transmission line parameters.

	Justification
PO1	Student get the knowledge on transmission line concept .(level 3)
PO2	Evaluating the different transmission lines (level 2)
PO5	Students able to create the different circuit designs (MATLAB). (level 2)
PSO2	Ability to investigate and solve the engineering problems using MATLAB, Keil and Xilinx.(level 2)

C212.6 : Analyze the transmission line configurations and applications.

	Justification
PO1	Student get the knowledge on designing the transmission lines(level 3)
PO3	Student able to develop the different transmission line configurations (level 2)
PSO2	Ability to investigate and solve the engineering problems using MATLAB, Keil and Xilinx.(level 2)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

ACADEMIC CALENDAR 2022-23

B. Tech./B.Pharm. II YEAR I & II SEMESTERS

I SEM

S. No	Description	Duration	
		From	To
1	Commencement of I Semester classwork	28.11.2022	
2	1 st Spell of Instructions	28.11.2022	21.01.2023 (8 Weeks)
3	First Mid Term Examinations	23.01.2023	30.01.2023 (1 Week)
4	Submission of First Mid Term Exam Marks to the University on or before	04.02.2023	
5	2 nd Spell of Instructions	31.01.2023	29.03.2023 (8 Weeks)
6	Second Mid Term Examinations	31.03.2023	08.04.2023 (1 Week)
7	Preparation Holidays and Practical Examinations	10.04.2023	15.04.2023 (1 Week)
8	Submission of Second Mid Term Exam Marks to the University on or before	15.04.2023	
9	End Semester Examinations	17.04.2023	29.04.2023 (2 Weeks)

Note: No. of Working / Instructional Days: 93

II SEM

S. No	Description	Duration	
		From	To
1	Commencement of II Semester classwork	01.05.2023	
2	1 st Spell of Instructions (including Summer Vacation)	01.05.2023	08.07.2023 (10 Weeks)
3	Summer Vacation	15.05.2023	27.05.2023 (2 Weeks)
4	First Mid Term Examinations	10.07.2023	15.07.2023 (1 Week)
5	Submission of First Mid Term Exam Marks to the University on or before	22.07.2023	
6	2 nd Spell of Instructions	18.07.2023	11.09.2023 (8 Weeks)
7	Second Mid Term Examinations	12.09.2023	16.09.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	19.09.2023	23.09.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	23.09.2023	
10	End Semester Examinations	25.09.2023	07.10.2023 (2 Weeks)

Note: No. of Working / Instructional Days: 92


 REGISTRAR



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Class Timetable

CLASS: II-B.Tech ECE-A

A.Y:2022-23

SEMESTER: I

LH: C-101

TIME/ DAY	I 9:40-10:30	II 10:30 -11:20	III 11:20-12:10	IV 12:10-1:00	1:00-1:30	V 1:30-2:20	VI 2:20-3:10	VII 3:10-4:00
MON	EDC	COI	EDC LAB / DSD LAB		L U N C H	DSD	NATL	SPORTS
TUE	PTSP	NATL	DSD	COI		EDC	SS	DSD(T)/SS(T)
WED	SS	PTSP	DSD LAB / BS LAB			DSD	SS(T)/EDC(T)	EDC
THU	NATL	PTSP	COI	EDC(T)/DSD(T)		SS	DSD	COUN
FRI	SS	EDC	COI	PTSP		LIB	CO-CU/DAA	
SAT	EDC	DSD	SS	NATL		PTSP	BS LAB / EDC LAB	

* (T) – Tutorial Concern Faculty

Course Code	Course Name	Name of the Faculty	Course Code	Course Name	Name of the Faculty
EC301PC	EDC-Electronic Devices and Circuits	K.Rajender	EC306PC	EDC LAB - Electronic Devices and Circuits Lab	K.Rajender/B.Ashwini/M.Srilatha
EC302PC	NATL-Network Analysis and Transmission Lines	M.Nagaraju	EC307PC	DSD LAB - Digital System Design Lab	G.Anusha/T.Divya/P.Krishna Rao
EC303PC	DSD-Digital System Design	G.Anusha	EC308ES	BS LAB - Basic Simulation Lab	P.Rajendra/T.Naresh
EC304PC	SS-Signals and Systems	P.Rajendra	LIB	Library	B.Ashwini/Dr.K.Srinivasa Reddy
EC305ES	PTSP-Probability Theory and Stochastic Processes	T.Naresh	COUN	Counseling	K.Rajender/G.Anusha/G.Anitha
*MC309	COI-Constitution of India	S.Swapna	CO-CU/DAA	Co-Curricular/Dept.Assc.Act.	K.Rajender/T.Naresh/D.Aruna
			SPORTS	Sports	G.Anitha/P.Sumana

Class Incharge

Head of the Department

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LESSON PLAN

Programme: B.Tech	Academic Year: 2022-23
Year: II	Semester: I
Course Title: Network Analysis & Transmission Lines	Course Code: EC302PC
Name of Faculty: M.NAGARAJU	

Unit-I Syllabus

Network Topology, Basic cutset and tie set matrices for planar networks, Magnetic Circuits, Self and Mutual inductances, dot convention, impedance, reactance concept, Impedance transformation and coupled circuits, co-efficient of coupling, equivalent T for Magnetically coupled circuits, Ideal Transformer.

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Review of R, L, C, RC, RL, RLC circuits	T1, R2	BB
1	Network topology, definitions	T1, R2	BB
1	Incidence matrix, complete & reduced incidence matrix	T1, R2	BB
1	Basic cutset matrix	T1, R2	BB
1	Tie set matrices for planar networks	T1, R2	BB
1	Problems	T1, R2	BB
1	Problems	T1, R2	BB
1	Magnetic circuits self and mutual inductances	T1, R2	BB
1	Dot convention in coupled circuits	T1, R2	BB
1	Co-efficient of coupling	T1, R2	BB
1	Equivalent T for Magnetically coupled circuits	T1, R2	BB
1	Impedance, reactance concept	T1, R2	BB
1	Impedance transformation	T1, R2	BB
1	Ideal transformer.	T1, R2	BB
1	Problems	T1, R2	BB
1	Problems	T1, R2	BB
Gap beyond syllabus(if any):			
Gap within the syllabus(if any)			
Course Outcome 1: Gain the knowledge on basic network elements and magnetic circuits.			

*Session Duration: 50 minutes

*Total Number of Hours/Unit: 16



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Unit-II Syllabus

Transient and Steady state analysis of RC, RL and RLC Circuits, Sinusoidal, Step and Square responses. RC Circuits as integrator and differentiators. 2nd order series and parallel RLC Circuits, Root locus, damping factor, over damped, under damped, critically damped cases, quality factor and bandwidth for series and parallel resonance, resonance curves.

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Steady state and transient analysis of RC,RL & RLC Circuits	T2, R 2	BB
1	Transient and steady state responses	T2, R 2	BB
1	Initial and final conditions of RLC elements	T2, R2	BB
1	Transient analysis of series RL circuit	T2, R2	BB
1	Transient analysis of series RC circuit	T2, R2	BB
1	Linear differential equations of RL&RC circuits	T2, R2	BB
1	Problems	T2, R2	BB
1	RC circuit as differentiator & integrator	T2, R2	BB
1	Sinusoidal response of series RL circuit	T2, R2	BB
1	Sinusoidal response of series RC circuit	T2, R2	BB
1	DC response of RLC series circuit	T2, R2	BB
1	DC response of RL& RC series circuits	T2, R2	BB
1	Resonance in series & parallel RLC circuits	T2, R2	BB
1	Resonant frequency, Bandwidth & Quality factor	T2, R2	BB
1	Problems & Root locus	T2, R 2	BB
1	Time response of first order system for unit step input	T2, R2	BB
1	Time response of Second order system for unit step input	T2, R2	BB
1	Damping ratio, undamped, under damped, over damped and critically damped cases	T2, R2	BB
Gap beyond syllabus (if any):			
Gap within the syllabus (if any)			
Course Outcome 2: Analyze the steady state and transient analysis of RLC circuits.			

*Session Duration: 50 minutes

*Total Number of Hours/Unit: 18



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Unit-III Syllabus

Two port network parameters, Z, Y, ABCD, h and g parameters, Characteristic impedance, Image transfer constant, image and iterative impedance, network function, driving point and transfer functions – using transformed (S) variables, Poles and Zeros. Standard T, Π , L Sections, Characteristic impedance, image transfer constants, Design of Attenuators, impedance matching network.

No. of Sessions Planned	Topics	Reference	Teaching Method/Aids
1	Two-port network parameters	T1, R1	BB
1	Z-parameters	T1, R1	BB
1	y-parameters	T1, R1	BB
1	A,B,C,D - parameters	T1, R1	BB
1	h,g parameters	T1, R1	BB
1	Problems	T1, R1	BB
1	Characteristic impedance, image transfer constant, iterative impedance	T1, R1	BB
1	network function	T1, R1	BB
1	driving point and transfer functions	T1, R1	BB
1	Poles and Zeros.	T1, R1	BB
1	Problems	T1, R1	BB
1	Standard T, Π , L Sections	T1, R1	BB
1	Design of Attenuators	T1, R1	BB
1	Impedance matching network	T1, R1	BB
Gap beyond syllabus(if any):			
Gap within the syllabus(if any)			
Course Outcome 3: Gain the knowledge on characteristics of two port network parameters (Z, Y, ABCD, h & g) Course Outcome 4: Gain the knowledge on network function, driving point and transfer functions using S-variables, poles and zeros)			

*Session Duration: 50minutes

*Total Number of Hours/Unit: 14



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Accredited by NAAC with A+ Grade, Recognized under 2(f) of UGC Act 1956

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

Unit-IV Syllabus

Transmission Lines - I: Types, Parameters, Transmission Line Equations, Primary & Secondary Constants, Equivalent Circuit, Characteristic Impedance, Propagation Constant, Phase and Group Velocities, Infinite Line Concepts, Lossless / Low Loss Characterization, Types of Distortion, Condition for Distortion less line, Minimum Attenuation, Loading - Types of Loading.

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Transmission Lines-I	T1,R4	BB
1	Types, Parameters & Transmission line equations	T1,R4	BB
1	Primary & Secondary constants	T1,R4	BB
1	Characteristic impedance, Propagation constant	T1,R4	BB
1	Phase and group velocities	T1,R4	BB
1	Infinite line concepts	T1,R4	BB
1	Lossless characterization	T1,R4	BB
1	Types of Distortion, Condition for Distortion less line	T1,R4	BB
1	Minimum attenuation, Types of loading	T1,R4	BB
1	Problems	T1,R4	BB
Gap beyond syllabus(if any):			
Gap within the syllabus(if any)			
Course Outcome 5: Analyze the transmission line parameters.			

*Session Duration: 50minutes

*Total Number of Hours/Unit: 10



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Website: <https://siiet.ac.in/>

Unit-V Syllabus

Transmission Lines– II: Input Impedance Relations, SC and OC Lines, Reflection Coefficient, VSWR. $\lambda/4$, $\lambda/2$, $\lambda/8$ Lines – Impedance Transformations, Smith Chart – Configuration and Applications, Single Stub Matching.

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Transmission Lines-II	T1,R4	BB
1	Input impedance in Short circuit and open circuit lines	T1,R4	BB
1	Reflection coefficient	T1,R4	BB
1	Voltage standing Wave Ratio $\lambda/4$, $\lambda/2$, $\lambda/8$ lines	T1,R4	BB
1	Impedance transformations	T1,R4	BB
1	Smith-chart configuration & Applications	T1,R4	BB
1	Single stub matching	T1,R4	BB
1	Problems	T1,R4	BB
Gap beyond syllabus(if any):			
Gap within the syllabus(if any)			
Course Outcome 6: Analyze the transmission line configurations and applications.			

*Session Duration: 50 minutes

*Total Number of Hours/Unit: 8

TEXT BOOKS:

1. Network Analysis and Transmission Lines by S Salivahanan
2. Network Analysis – Van Valken burg, 3rd Ed., Pearson, 2016.
3. Networks, Lines and Fields-JD Ryder, PHI, 2nd Edition, 1999

REFERENCE BOOKS:

1. Electric Circuits – J. Edminister and M. Nahvi – Schaum’s Outlines, Mc Graw Hills Education, 1999.
2. Engineering Circuit Analysis–William Hayt and Jack E Kemmerly, MGH, 8th Edition, 1993.
3. Transmission Lines and Networks – Umesh Sinha, Satya Prakashan, 2001

WEB REFERENCES:

1	https://archive.nptel.ac.in/courses/108/104/108104139/
2	https://archive.nptel.ac.in/courses/108/102/108102146/
3	https://youtu.be/s2Nh0z67Pno?si=5IFGxsDIBAzdoXfJ
4	https://youtu.be/1crTSC4dSEo?si=r9mbRB4JiSUJbdjF
5	https://youtu.be/GasWAlIvvD8?si=55dnnIYhj8Kb4B5c
6	https://youtu.be/5FMrf9kS-Go?si=mEfk5x11bJeNI6hg
7	https://youtu.be/b_VCIdXEK2I?si=PXT_pRSLjqQnEUwq
8	https://youtu.be/QhABic_PhDs?si=BR4H-21AMDTbauh2
9	https://youtu.be/ITVQctVWS9U?si=CfLK4gbX83BFYNNK
10	https://youtu.be/VzGnb2K4RGQ?si=i1AD33JICCL1HIGV



Lecture notes

Unit 1 link:

https://drive.google.com/file/d/1YmcYpYpfGh7zxJ7Ih7uIn08CGnsJPiQ_/view?usp=sharing

Unit 2 link:

<https://drive.google.com/file/d/1vAEugwRPacmGvcawoWJYqfcc-G9S2PS7/view?usp=sharing>

Unit 3 link:

https://drive.google.com/file/d/1LCYpT6Mdw_uG4ACMNWPF8sy0veha53Qh/view?usp=sharing

Unit 4 link:

<https://drive.google.com/file/d/127coFLMJ6vlpa09dV3s4bH1bnl-y3CSn/view?usp=sharing>

Unit 5 link:

https://drive.google.com/file/d/1QfDCPCmRxMgYaeiPEvnJTRvzI-_r6XdE/view?usp=sharing



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Website: <https://siiet.ac.in/>

Power point presentations

PPT link 1:

https://docs.google.com/presentation/d/1dYsTSdsj1mFLMEdx2_XYjEk5hXrxpwI7/edit?usp=sharing&oid=111085833290731553716&rtpof=true&sd=true

PPT link 2:

https://docs.google.com/presentation/d/1XT4JLbg852rkOiwyTqOpr3w7JqG_H5yW/edit?usp=sharing&oid=111085833290731553716&rtpof=true&sd=true

CodeNo:153BH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year I Semester Examinations, March - 2022

NETWORK ANALYSIS AND TRANSMISSION LINES

(Electronics and Communication Engineering)

Time: 3Hours

Max.Marks: 75

Answer any five questions
All questions carry equal marks

1. Explain the following terms:

a) Graph of a network	b) Oriented Graph	c) Rank of a Graph
d) Planar and non-planar graph and	e) Sub graph.	[15]

2. Calculate the currents I_1 and I_2 for the following circuit shown in figure1. [15]

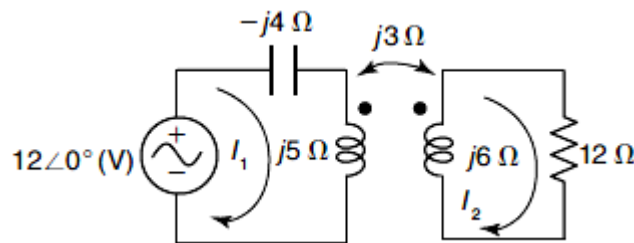


Figure:1

3. a) Prove that the active power consumed in any purely reactive circuit is zero.
- b) For the following network shown in figure2, a steady state is reached with switch open. At $t = 0$, switch is closed. Find the three loop currents at $t = 0^+$. [6+9]

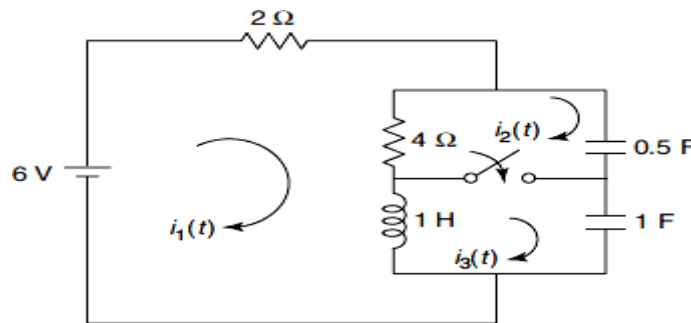


Figure:2

4. For the circuit shown in figure3, find $i_1(t)$ for $\omega = 100 \text{ rad/sec}$. [15]

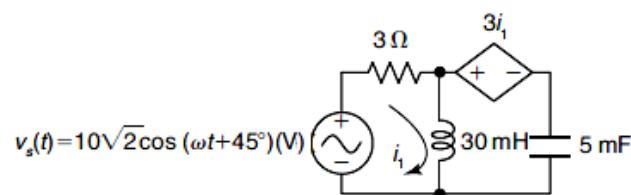


Figure:3

5. a) Explain the condition for symmetry in a two port network with a proper example.
 b) For the following network shown in figure 4, find the Y- parameters. [6+9]

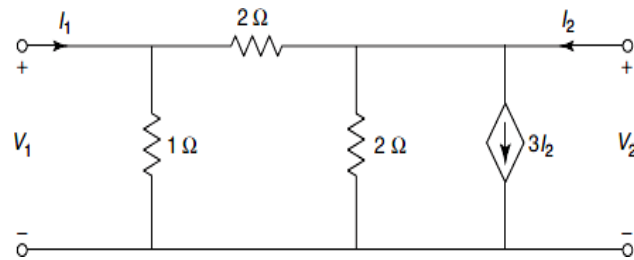


Figure:4

6. What are image parameters? Derive expression of image parameters in terms of:
 a) ABCD parameters
 b) open-circuit and short-circuit impedances. [7+8]
7. The values of primary constants of an open-wire line per km are $R = 10 \Omega$, $L = 3.5 \text{ mH}$, $C = 0.008 \mu\text{F}$ and $G = 0.7 \mu\text{S}$. For a signal frequency of 1000 Hz, calculate the characteristic impedance, Propagation constant, attenuation constant, phase constant, wavelength and phase velocity v_p . [15]
8. a) List and explain the characteristics of impedance smith chart.
 b) Explain the significance and design of single stub impedance matching and discuss the factors on which stub length depends. [7+8]

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Code No: 153BH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year I Semester Examinations, August/September - 2022

NETWORK ANALYSIS AND TRANSMISSION LINES

(Electronics and Communication Engineering)

Time: 3 Hours

Max.Marks:75

Answer any five questions
All questions carry equal marks

- - -

- 1.a) Explain the concepts basic cut set and basic tie set matrices for planar networks.
b) Formulate the fundamental cut set matrix for the graph shown in figure 1. [7+8]

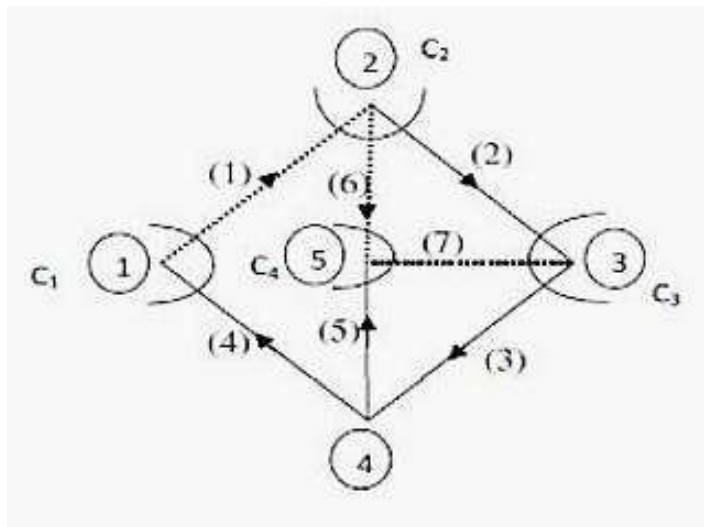


Figure 1

- 2.a) Define self and mutual inductance. Explain the elementary theory of ideal transformer.
b) A long solenoid has 500 turns. When a current of 2 A is passed through it, the resulting magnetic flux linked with each turn of the solenoid is 4×10^{-3} Wb, find self-inductance. [9+6]
- 3.a) In a series RLC circuit, with $R = 2\Omega$, $L = 2$ mH, and $C = 10$ μ F. Find the resonant frequency, half power frequencies, band width, quality factor.
b) Explain how does a series R-C circuit acts as integrator? [8+7]
- 4.a) Show that the resonant frequency is the geometric mean of two half power frequencies.
b) A series RLC circuit consists of a resistance of 25 Ω , inductance 0.4 H, capacitance of 250 μ F is connected a supply of 230V, 50 Hz. Find the total impedance, current, power, power factor, voltage across coil and capacitance. [7+8]

- 5.a) Derive the condition for a two port network to be symmetrical in terms of ABCD parameters.
- b) What is two-port network? Obtain the Z, Y and parameters of a network given below figure 2. [6+9]

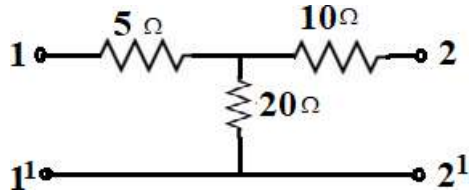


Figure 2

- 6.a) Design an attenuator in Pi configuration with 50Ω characteristic impedance and attenuation of 6 dB. Transform the same to a T network. Explicitly show the S-Matrix calculations.
- b) Explain the concept of poles, zeros, their significance and necessary conditions for driving point functions and transfer functions? [8+7]
- 7.a) Derive an expression for the velocity and characteristic impedance in distortion less transmission line.
- b) Explain the conditions which are used for minimum attenuation in transmission lines. [8+7]
- 8.a) Derive the relation between reflection coefficient and characteristic impedance in a transmission line.
- b) Explain the principal of single stub matching. [7+8]

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Code No: 153BH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, March - 2021

NETWORK ANALYSIS AND TRANSMISSION LINES

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- - -

- 1.a) What is a cutset? How to obtain the basic cutset matrix?
 b) In the circuit shown in figure 1, $L_1 = L_2 = 5 \mu\text{H}$ and $M = 1 \mu\text{H}$. Compute v_1 and v_2 , If $i_1 = 3 \cos 150t \text{ mA}$, $i_2 = 4 \sin 150t \text{ mA}$ [7+8]

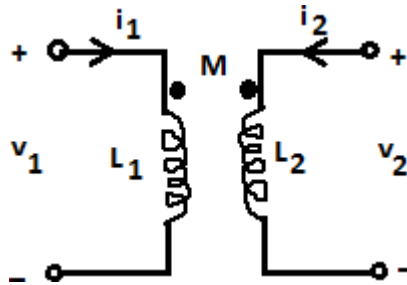


Figure: 1

- 2.a) What is dot convention? Why do we use it?
 b) Using basic tieset matrix, find current 'i' in the circuit shown in figure 2. [7+8]

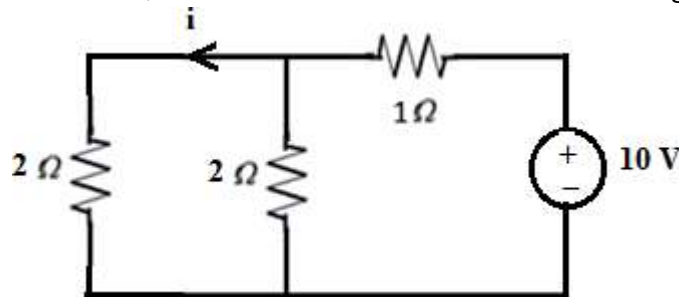


Figure: 2

- 3.a) Draw the impedance and current curves for the series RLC resonant circuit. Explain about it?
 b) An inductive circuit draws 5 A and 500 W from a 200-V, 50 Hz AC supply, determine (i) the impedance (ii) the power factor (iii) the reactive power (iv) the apparent power. [7+8]
- 4.a) Draw the step response of a second order system for critically damped case and Explain.
 b) In the circuit shown in figure 3, find current 'i' at $t = 3 \text{ sec}$. [8+7]

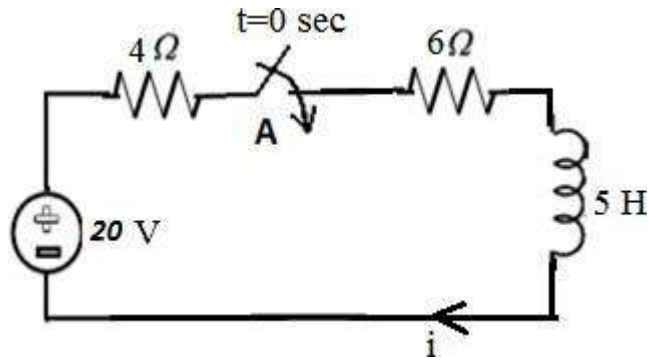


Figure: 3

- 5.a) Write short notes on driving point and transfer functions.
 b) For the network shown in figure 4, determine impedance parameters. [7+8]

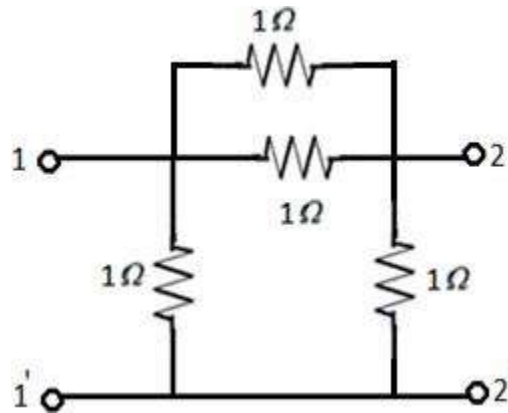


Figure: 4

- 6.a) Draw the structure of standard T section and explain in detail.
 b) For the network figure 5, determine hybrid parameters. [7+8]

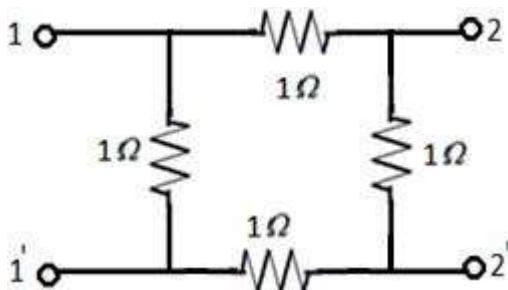


Figure: 5

- 7.a) Define loading. Explain different types of loading.
 b) Discuss in detail about phase and group velocities. [7+8]

- 8.a) What is single stub matching? Explain in detail.
 b) Explain about input impedance relations for various cases of transmission lines. [7+8]

Code No: 153BH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, September-2021

NETWORK ANALYSIS AND TRANSMISSION LINES

(Electronics and Communication Engineering)

Time: 3hours

Max.Marks:75

Answer any five questions
All questions carry equal marks

- 1.a) Discuss the dot convention used in magnetically coupled coils.
 b) An iron ring of 0.25meter diameter and 2×10^{-3} sq.m. in cross section with a saw cut 1.5 mm wide is wound with 150 turns of copper wire. The air gap flux density is 0.7 Tesla. The relative permeability of iron is 800. Calculate the exciting current. Ignore the leakage. [7+8]

- 2.a) Define the following: (i) node (ii) branch (iii) tree.
 b) For the network shown in figure1, obtain the incidence matrix and determine the relationship between loop and branch currents. [6+9]

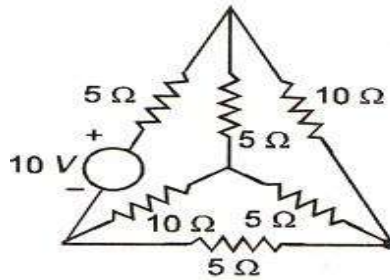


Figure:1

3. A sinusoidal voltage $25 \sin 10t$ is applied at time $t=0$ to a series R-L circuit shown in figure 2, consisting of $R = 5\Omega$ and inductor $L = 1$ Henry. Find the value of $i(t)$. Assume no current through the inductor before application of voltage. [15]

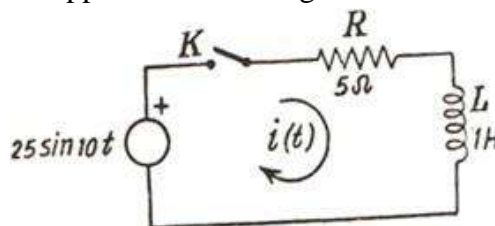


Figure:2

- 4.a) Obtain an expression for transient current in a R-L circuit is suddenly connected with a unit step function by closing the switch at $t=0$.
 b) A series RLC circuit has a quality factor of 5 at 50 rad/sec. The current flowing through the circuit at resonance is 10A and the supply voltage is 100V. Find the circuit constants. [8+7]
- 5.a) Explain different parameters to be considered for design of attenuators.
 b) Draw the symmetrical T and π sections and their decomposition into L sections. [8+7]

6. a) The network equations for two-port network k give the current I_1 and I_2 at the two ports as $I_1 = 0.25V_1 - 0.2 V_2$ and $I_2 = -0.2V_1 + 0.1 V_2$
Determine the Y and ABCD parameters for the network.
- b) Find the Z-parameters for the resistive network shown in figure3. [7+8]

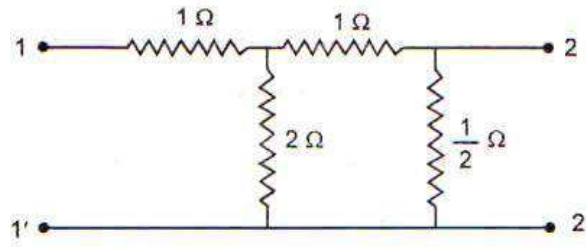


Figure:3

7. Derive the equation of attenuation constant and phase constant of Transmission Line in terms of R, L, C and G. [15]
8. a) Find the reflection coefficient of a 50Ω transmission line when it is terminated by a load impedance of $(60+j 40) \Omega$.
- b) Mention the disadvantages of single stub matching. [8+7]

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Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

I - Mid Examinations, JAN -2023

SET-I

Year & Branch: II ECE A&B

Date: 23-01-2023(AN)

Subject: NATL

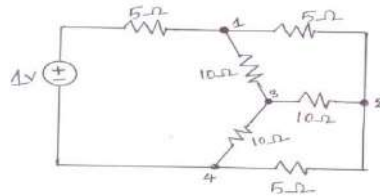
Max. Marks: 10

Time: 60 mins

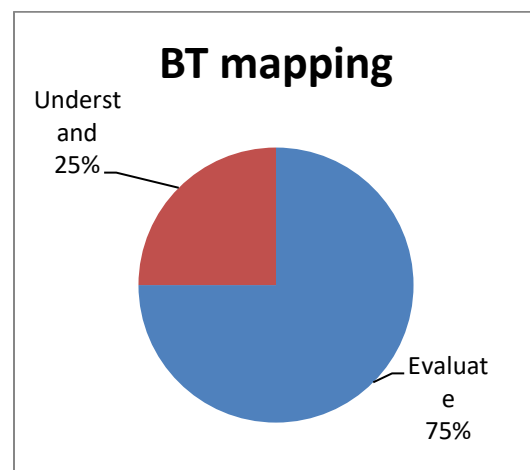
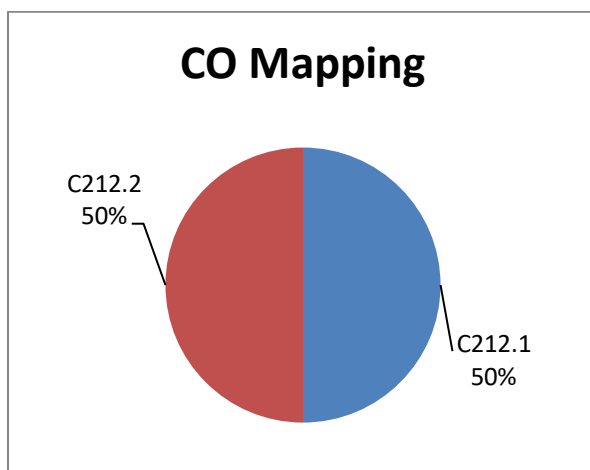
1. Determine the branch currents and loop currents by using Tie Set Matrix for the network shown below.

[5M] [C212.1]

[Evaluate]



2. a) Obtain an expression for coefficient of coupling. [2M] [C212.1] [Evaluate]
- b) A coil of $800\mu\text{H}$ is magnetically coupled to another coil of $200\mu\text{H}$. The Coefficient of Coupling between two coils is 0.05. Calculate the equivalent inductance if the two coils are connected in: a) Series Aiding b) Series Opposing c) Parallel Aiding and d) Parallel Opposing. [3M] [C212.1] [Evaluate]
3. What is Time Constant? Explain time constant in case of series RL and RC series circuits. [5M] [C212.2] [Understand]
4. A series RC circuit with $R=25$ ohms, $C=0.02\text{F}$ has a constant voltage $V=50\text{V}$ applied at $t=0$. Determine the current I , V_R and V_C . [5M] [C212.2] [Evaluate]



Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

II - Mid Examinations, MAR -2023

Set - I

Year & Branch: II ECE- A&B

Date: 31-03-2023(AN)

Subject: NATL

Max. Marks: 10

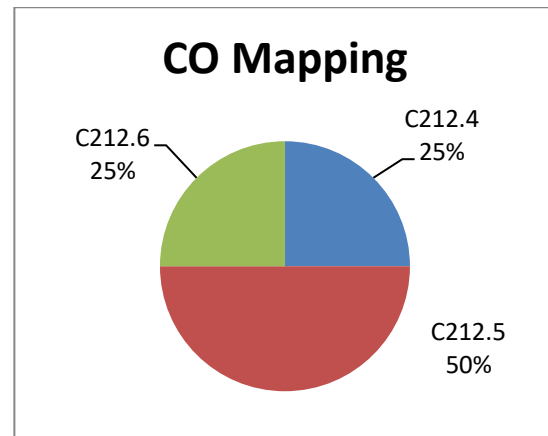
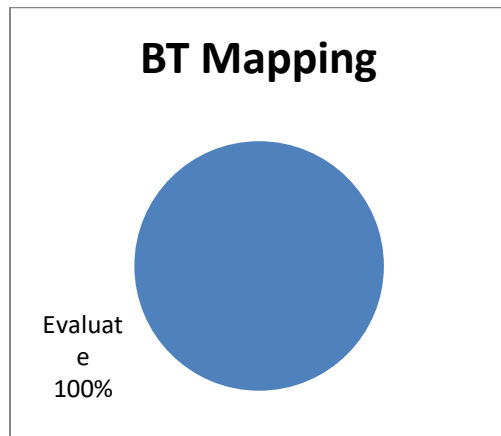
Time: 60 mins

Answer any **TWO** Questions. All Question Carry Equal Marks

2*5=10 marks

(This question paper is prepared with Course Outcome and BT's mapping)

1. Derive the characteristic impedance of a symmetrical T-network having characteristic impedance (Z_o), terminated with a load (Z_o). [Evaluation] [C212.4] [5M]
2. Derive the general solution of Transmission Line Equations. [Evaluation] [C212.5] [5M]
3. Derive the following terms: (i) Propagation constant (γ), (ii) Attenuation constant (α), (iii) phase shift constant (β) . [Evaluation] [C212.5] [5M]
4. Derive the input impedance by using voltage and current equations at the sending end of a transmission line. [Evaluation] [C212.6] [5M]



10. The measure of duration of transient interval is ---- []
a) time period b) time constant
c) time interval d) none of the above

Fill in the blanks.

11. The unit of magnetic flux density is-----.
12. The ratio of total flux to the useful flux in a circuit is called ----- coefficient.
13. A tree of an oriented graph consists at all nodes but no -----.
14. If two coils are connected in series opposition, then the effective inductance is-----.
15. Under resonance the power factor of series RLC circuit is -----.
16. The bandwidth of series resonant circuit is given by -----.
17. In steady state capacitor acts as -----.
18. The parallel resonance circuit is also called as -----.
19. The current through -----cannot change instantaneously.
20. If there consist n number of nodes then the rank R of a graph is -----.

*****ALL THE BEST*****

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

B-Tech II - Mid Examinations, MAR -2023

Objective Type Exam

Year & Branch: II –ECE-A&B

Date: 31-03-2023(AN)

Subject: NATL

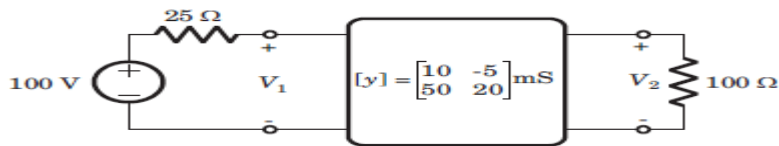
Max. Marks: 10

Time: 20 min

Name:Roll No.....

Choose the correct answers.

1. Find V_1 and V_2 . []



- a) -68.6 V, 114.3 V b) 68.6 V, -114.3 V c) 114.3 V, -68.6 V d) -114.3 V, 68.6 V
2. A 2-port resistive network satisfy the condition $A = D = 3/2B = 4/3C$. The z_{11} of the network is []
a) 4/3 b) 3/4 c) 2/3 d) 3/2
3. two port network is said to be symmetrical when the following equalities hold good []
a) $Z_{11}=Z_{22}$ and $Z_{12}=Z_{21}$ b) $Z_{11}=Z_{22}$ c) $Y_{12}=Y_{21}$ d) $Y_{12}=Y_{21}$ and $Y_{11}=Y_{22}$
4. ABCD parameters are used in analysis of []
a) short circuit b) electronic circuit c) open circuit d) transmission line
5. The two port network is reciprocal if []
a) $Y_{11}=Y_{21}$ b) $Y_{12}=Y_{21}$ c) $Y_{22}=Y_{21}$ d) $Y_{11}=Y_{22}$
6. The roots of the denominator polynomial of the transfer function of the system are called []
a) zeros b) poles c) gain constant d) parameters
7. If the received signal is not the exact replica of the transmitted signal is called []
a) distorted signal b) analog signal c) digital signal d) none of the above
8. The received waveform will not be identical with the input waveform is known as []
a) voltage distortion b) current distortion
c) frequency distortion d) none of the above

9. The inductance of a transmission line can be increased by the introduction of loading coil at uniform intervals is called []

- a) continuous loading
- b) lumped loading
- c) patch loading
- d) none of the above

10. Phase velocity is also called as []

- a) velocity of light
- b) group velocity
- c) velocity of propagation
- d) none of the above

Fill in the blanks.

11. In hybrid parameters, h_{12} is called as-----.

12. Y parameters are also called as -----

13. Condition for symmetry of ABCD parameters is -----.

14. For symmetrical network, image transfer constant is called as-----.

15. Characteristic impedance of a symmetrical network, Z_0 -----.

16. The ratio between the transform of voltage to the transform of current at one particular port is called as -----.

17. The ratio of the maximum and minimum magnitude of current or voltage on a line having standing waves is called -----.

18. The energy delivered to the load may be less than that of energy delivered if impedances Z_1 and Z_2 are matched it resulting in a -----.

19. Product of group velocity and phase velocity is equals to-----.

20. Applications of smith chart-----.

*****ALL THE BEST*****

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

B-Tech I - Mid Examinations, JAN-2023

Year & Branch: II -ECE- A

Date: 23-01-2023(AN)

Subject: NATL

ANSWER KEY

Descriptive paper key link:

<https://drive.google.com/file/d/1VeTssjTwDO4jHXtSdc5BcjHe1meKDdzx/view?usp=sharing>

Objective Key Paper

I. Choose the correct alternative:

- 1) a. Reluctance
- 2) b. $b-n+1$
- 3) b. $\sqrt{L1*L2}$
- 4) b. both are equivalent
- 5) b. resultant current and applied voltage are in phase
- 6) c. $1/wCR$
- 7) c. $f_r = \sqrt{f_1 * f_2}$
- 8) a. twig
- 9) d. Increases
- 10) b. time constant

II. Fill in the blanks:

- 11) wb/m^2
- 12) coefficient.
- 13) closed path
- 14) $L=L1+L2-2M$
- 15) unity
- 16) R/L
- 17) open circuit
- 18) rejector circuit
- 19) transient circuits
- 20) N-1

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

B-Tech II - Mid Examinations, MAR-2023

Year & Branch: II –ECE-A

Date: 31/03/2023 (AN)

Subject: NATL

ANSWER KEY

Descriptive paper key link:

[https://drive.google.com/file/d/1CUivXxArS91a7A4HO1xRRSnJAty0VV1-
/view?usp=sharing](https://drive.google.com/file/d/1CUivXxArS91a7A4HO1xRRSnJAty0VV1-/view?usp=sharing)

Objective/Quiz Key Paper

I. Choose the correct alternative:

- 1) b .
- 2) a .
- 3) b.
- 4) d .
- 5) b .
- 6) b .
- 7) a .
- 8) c.
- 9) b.
- 10) c.

Fill in the blanks:

- 1) Reverse voltage gain
- 2) Short circuit admittance parameter
- 3) $AD-BC=1$
- 4) Propagation constant
- 5) Square root of $Z_{OC} * Z_{SC}$
- 6) Driving point impedance
- 7) Standing wave ratio
- 8) Reflection loss
- 9) Square of velocity of light
- 10) Convert impedance to admittance

Sri Indu Institute of Engineering & Technology

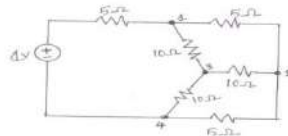
Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

I - Mid Assignment Questions

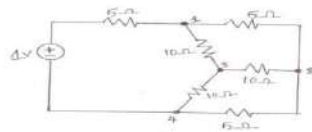
Year & Branch: II ECE A&B

Subject: NATL

1. Explain the terms i.node, ii.branch, iii.loop, iv.oriented graph, v.tree, vi.co-tree, vii.twigs & viii.links [5M] [Understand]
2. Draw the graph of the network shown in figure and write the incidence matrix.[5M] [create]
3. Determine the branch currents and loop currents by using Tie set matrix for the network shown below. [5M] [Evaluate]



4. Determine the branch currents and loop currents by using Cut set matrix for the network shown below. [5M] [Evaluate]



5. Explain the Dot convention Rule in coupled circuits. [2M] [Understand]
6. Explain the parallel connection in coupled circuit.[5M] [Understand]
7. Obtain the equivalent conductively coupled circuit for magnetically coupled circuit. [5M] [Evaluate]
8. What is Ideal Transformer, derive the input impedance in the Ideal Transformer. [5M] [Evaluate]
9. Determine the currents I_1 & I_2 in circuit shown below.[5M] [Evaluate]
10. A coil of $800\mu\text{H}$ is magnetically coupled to another coil of $200\mu\text{H}$. The Coefficient of Coupling between two coils is 0.05. Calculate the equivalent inductance if the two coils are connected in: a) Series Aiding b) Series Opposing c) Parallel Aiding and d) Parallel Opposing. [5M] [Evaluate]
11. A coil of 50 ohm and inductance 0.1H is connected in series with capacitor of $150\mu\text{f}$ across a 200v, 50Hz supply, calculate current, power factor, power, voltage across the inductor & capacitor & impedance.[5M] [Evaluate]
12. Two identical coupled coils are connected in series and have an equivalent inductance of 0.08H and 0.0354H when connected in series aiding & series opposing. Find the value of inductance L, mutual inductance M. [5M] [Evaluate]

Sri Indu Institute of Engineering & Technology

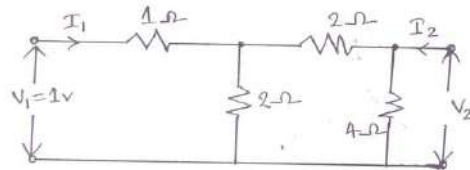
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II – Mid Assignment Questions

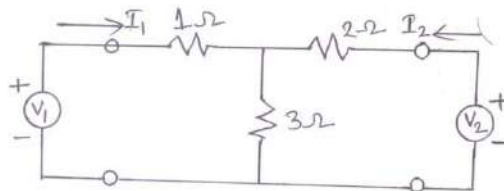
Year & Branch: II ECE A&B

Subject: NATL

1. Explain the four types of two-port network parameters. (Understand) [5M]
2. Find Y-parameters for the network of figure shown below. (Create) [5M]



3. Determine the h-parameters for the 2-port network shown in figure. (Create) [5M]



4. Derive the characteristic impedance for symmetrical π -network. [Evaluation] [5M]
5. Derive the Propagation constant (γ) in a symmetrical T-network. [Evaluation] [5M]
6. Derive the Attenuation constant (α), R_1 , R_2 and characteristic impedance R_0 in symmetrical T-attenuator. [Evaluation] [5M]



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Accredited by NAAC with A+ Grade, Recognized under 2(f) of UGC Act 1956

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

Course Title	NETWORK ANALYSIS & TRANSMISSION LINES
Course Code	EC302PC
Programme	B.Tech
Year & Semester	II year I-semester
Regulation	R18
Course Faculty	M.NAGARAJU, Assistant Professor, EEE

Slow learners: (Section-A)

S No	Roll no	No of backlogs	Internal-I Status	Internal-II Status
1	21X31A0402	3	16	17
2	21X31A0403	3	18	19
3	21X31A0408	3	19	15
4	21X31A0409	4	15	18
5	21X31A0412	3	19	14
6	21X31A0414	3	18	17
7	21X31A0417	3	16	17
8	21X31A0422	3	20	14
9	21X31A0433	3	21	19
10	21X31A0435	3	22	20
11	21X31A0436	3	15	22

Advanced learners: (Section-A)

O.	ROLL.NO.	GATE MATERIAL
1.	21X31A0401	<p>Network Topology: Basic cut set and tie set matrices for planar networks, Magnetic circuits, Self and Mutual inductances, dot convention, co-efficient of coupling, equivalent T for Magnetically coupled circuits.</p> <p>Transient analysis of RL, RC and RLC circuits: Sinusoidal, step and square responses, damping factor, quality factor and bandwidth for series and parallel resonance circuits.</p> <p>Transmission Lines-I: Types, Parameters, Transmission line equations, primary & secondary constants, Propagation constant, Attenuation constant, Phase shift constant.</p>
2.	21X31A0404	
3.	21X31A0405	
4.	21X31A0406	
5.	21X31A0407	
6.	21X31A0410	
7.	21X31A0413	
8.	21X31A0415	
9.	21X31A0416	
10.	21X31A0418	
11.	21X31A0420	
12.	21X31A0421	
13.	21X31A0423	
14.	21X31A0424	
15.	21X31A0425	
16.	21X31A0426	
17.	21X31A0427	
18.	21X31A0428	
19.	21X31A0429	
20.	21X31A0431	
21.	21X31A0432	
22.	21X31A0434	
23.	21X31A0437	



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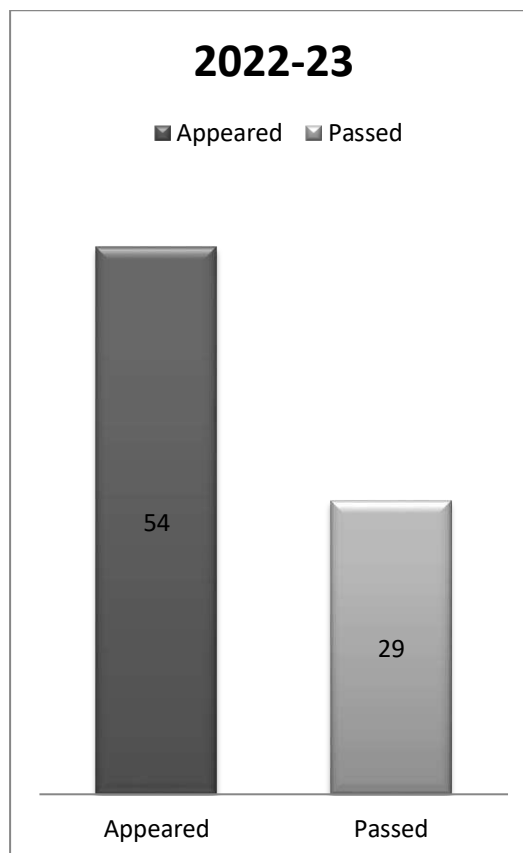
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Website: <https://siiet.ac.in/>

BATCH ECE-II BTECH I SEM ECE-A RESULT ANALYSIS

ACADAMIC YEAR	COURSE NAME	NUMBER OF STUDENTS		QUESTION PAPER SETTING		PASS%
		APPEARED	PASSED	INTERNAL	EXTERNAL	
2022-23	NETWORK ANALYSIS & TRANSMISSION LINES	54	29	COURSE FACULTY	JNTUH	53.70

NETWORK ANALYSIS & TRANSMISSION LINES (C212) RESULT ANALYSIS





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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

REMEDIAL CLASSES TIME TABLE

A.Y 2022-23

SEMESTER-I

BRANCH/ SEC	MON 4.00 PM- 5.00 PM	TUE 4.00 PM-5.00 PM	WED 4.00 PM- 5.00 PM	THUR 4.00 PM- 5.00 PM	FRI 4.00 PM- 5.00 PM
II ECE-A	EDC	NATL	DSD	PTSP	SS
II ECE-B	NATL	DSD	PTSP	SS	EDC
III ECE-A	MPMC	DCCN	CS	BEFA	EMI
III ECE-B	DCCN	CS	BEFA	EMI	MPMC
III ECE-C	CS	BEFA	EMI	MPMC	DCCN
IV ECE-A	MW&OC	DIP	PPL	NS&C	JAVA
IV ECE-B	DIP	PPL	NS&C	JAVA	MW&OC
IV ECE-C	PPL	NS&C	JAVA	MW&OC	DIP


HOD Department
Electronics and Communication Engg. Dept.
SRI INDU INSTITUTE OF ENGG & TECH,
Sheriguda(V), Ibrahimpatnam(M), R.R.Dist-501 510


PRINCIPAL
Sri Indu Institute of Engineering & Tech.
Sheriguda(V), Ibrahimpatnam,
R R Dist Telangana -501 510



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication Engineering

Course Outcome Attainment (Internal Examination-1)

Name of the faculty: M.NAGARAJU

Academic Year: 2022-23

Branch & Section: ECE - A

Examination: I Internal

Course Name: Network analysis & transmission lines

Year: II Semester: I

S.No	HT No.	Q1a	Q1b	Q1c	Q2a	Q2b	Q2C	Q3A	Q3b	Q3c	Q4a	Q4b	Q4c	Obj1	A1
Max. Marks		5			2	3		5			5			10	5
1	21X31A0401	5			1	3								9	5
2	21X31A0402	3												8	5
3	21X31A0403	5												8	5
4	21X31A0404	5			1	3								9	5
5	21X31A0405	5						2						9	5
6	21X31A0406	5			1	3								10	5
7	21X31A0407	5				2								7	5
8	21X31A0408	4				2								8	5
9	21X31A0409	4												6	5
10	21X31A0410	5			1	3								9	5
11	21X31A0412	2				3								9	5
12	21X31A0413	5				3								10	5
13	21X31A0414	2				2								9	5
14	21X31A0415	4				3								9	5
15	21X31A0416	4			1	3								6	5
16	21X31A0417					2					1			8	5
17	21X31A0418	5			1	3								9	5
18	21X31A0420	5			2	3								10	5
19	21X31A0421	5			1	3								9	5
20	21X31A0422	4						2						9	5
21	21X31A0423	5			1	3								9	5
22	21X31A0424	5			1	3								9	5
23	21X31A0425	4			1	3								9	5
24	21X31A0426	4			1	3								9	5
25	21X31A0427	5			1	3								10	5
26	21X31A0428	5				3								9	5
27	21X31A0429	4			1	2								6	5
28	21X31A0431	5				2								9	5
29	21X31A0432	5				3								9	5
30	21X31A0433	5				3								8	5
31	21X31A0434	5			1	3								10	5
32	21X31A0435	5				3								9	5
33	21X31A0436	5												5	5
34	21X31A0437	5												4	5
35	22X35A0401	3				3								9	5
36	22X35A0402					3		5						8	5
37	22X35A0403	5				3								8	5
38	22X35A0404				2	3								8	5
39	22X35A0405				2	3		1						8	5
40	22X35A0406				2	3					4			8	5

CO - 4														
CO - 5														
CO - 6														

CO Attainment based on Exam Questions:

CO - 1	94%			38%	100%								96%	100%
CO - 2	94%						40%				67%		96%	100%
CO - 3													96%	100%
CO - 4														
CO - 5														
CO - 6														

CO	Subj	obj		Asgn	Overall	Level
CO-1	77%	96%		100%	91%	3.00
CO-2	67%	96%		100%	88%	3.00
CO-3		96%		100%	98%	3.00
CO-4						
CO-5						
CO-6						

Attainment Level	
1	40%
2	50%
3	60%

Attainment (Internal 1 Examination) =

3.00

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication Engineering

Course Outcome Attainment (Internal Examination-2)



Name of the faculty: M.NAGARAJU

Academic Year: 2022-23

Branch & Section: ECE - A

Examination: II Internal

Course Name: Network analysis & transmission lines Year: II Semester: I

S.No	HT No.	Q1a	Q1b	Q1c	Q2a	Q2b	Q2c	Q3a	Q3b	Q3c	Q4a	Q4b	Q4c	Obj2	A2
	Max. Marks ==>	5			5			5			5			10	5
1	21X31A0401				5									9	5
2	21X31A0402	2												10	5
3	21X31A0403										5			9	5
4	21X31A0404				3						2			10	5
5	21X31A0405	4												5	5
6	21X31A0406				5						5			10	5
7	21X31A0407	5												5	5
8	21X31A0408				1									9	5
9	21X31A0409										4			9	5
10	21X31A0410				5									9	5
11	21X31A0412	5												4	5
12	21X31A0413				5			5						10	5
13	21X31A0414				3									9	5
14	21X31A0415							4						7	5
15	21X31A0416	5												4	5
16	21X31A0417							4						8	5
17	21X31A0418	4												5	5
18	21X31A0420				5						5			10	5
19	21X31A0421	2												7	5
20	21X31A0422				1									8	5
21	21X31A0423				5			2						10	5
22	21X31A0424				3									10	5
23	21X31A0425				2						5			9	5
24	21X31A0426				4						4			10	5
25	21X31A0427				5						5			10	5
26	21X31A0428				3						4			10	5
27	21X31A0429										5			9	5
28	21X31A0431				4						3			9	5
29	21X31A0432				2						4			10	5
30	21X31A0433										5			9	5
31	21X31A0434	5									5			10	5
32	21X31A0435										5			10	5
33	21X31A0436				4						4			9	5
34	21X31A0437							4			4			10	5
35	22X35A0401	3						4						9	5
36	22X35A0402							3						9	5
37	22X35A0403	2									4			9	5
38	22X35A0404							4						9	5
39	22X35A0405							3						10	5
40	22X35A0406	3												9	5
41	22X35A0407				5			5						10	5
42	22X35A0408				2									8	5
43	22X35A0409				5									8	5
44	22X35A0410				5						5			10	5

45	22X35A0411				4						3			8	5
46	22X35A0412				5						3			10	5
47	22X35A0413				5						5			10	5
48	22X35A0414								4		5			9	5
49	22X35A0415				5				5					10	5
50	22X35A0416								5		5			10	5
51	22X35A0417				4						3			9	5
52	22X35A0418				5									10	5
53	22X35A0419				5				3					9	5
54	22X35A0420				4				4					9	5
55															
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67															
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69															
70															
71															
72															
73															
Target set by the faculty / HoD		3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	6.00	3.00
Number of students performed above the target		8	0	0	25	0	0	14	0	0	24	0	0	49	54
Number of students attempted		11	0	0	30	0	0	15	0	0	25	0	0	54	54
Percentage of students scored more than target		73%			83%			93%			96%			91%	100%

CO Mapping with Exam Questions:

CO - 1															
CO - 2															
CO - 3															
CO - 4	y			y									y	y	
CO - 5							y						y	y	
CO - 6										y			y	y	

% Students Scored >Target %	73%			83%			93%			96%			91%	100%
-----------------------------	-----	--	--	-----	--	--	-----	--	--	-----	--	--	-----	------

CO Attainment based on Exam Questions:

CO - 1														
CO - 2														
CO - 3														
CO - 4	73%			83%								91%	100%	
CO - 5							93%					91%	100%	
CO - 6									96%			91%	100%	

CO	Subj	obj		Asgn	Overall	Level
CO-1						
CO-2						
CO-3						
CO-4	78%	91%		100%	90%	3.00
CO-5	93%	91%		100%	95%	3.00
CO-6	96%	91%		100%	96%	3.00

Attainment Level	
1	40%
2	50%
3	60%

Attainment (Internal Examination-2) = **3.00**



RI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication Engineering

Course Outcome Attainment (University Examinations)

Name of the faculty : M.NAGARAJU

Academic Year: 2022-23

Branch & Section: ECE - A

Year / Semester: II/I

Course Name: Network analysis&transmission lines

S.No	Roll Number	Marks Secured
1	21X31A0401	30
2	21X31A0402	0
3	21X31A0403	7
4	21X31A0404	4
5	21X31A0405	40
6	21X31A0406	26
7	21X31A0407	0
8	21X31A0408	4
9	21X31A0409	10
10	21X31A0410	10
11	21X31A0412	0
12	21X31A0413	31
13	21X31A0414	15
14	21X31A0415	30
15	21X31A0416	11
16	21X31A0417	16
17	21X31A0418	44
18	21X31A0420	26
19	21X31A0421	30
20	21X31A0422	9
21	21X31A0423	26
22	21X31A0424	11
23	21X31A0425	16
24	21X31A0426	31
25	21X31A0427	35
26	21X31A0428	5
27	21X31A0429	26
28	21X31A0431	30
29	21X31A0432	26
30	21X31A0433	7
31	21X31A0434	26
32	21X31A0435	13
33	21X31A0436	9
34	21X31A0437	30
35	22X35A0401	30
Max Marks		75

S.No	Roll Number	Marks Secured
36	22X35A0402	26
37	22X35A0403	29
38	22X35A0404	20
39	22X35A0405	17
40	22X35A0406	26
41	22X35A0407	29
42	22X35A0408	10
43	22X35A0409	13
44	22X35A0410	28
45	22X35A0411	10
46	22X35A0412	34
47	22X35A0413	26
48	22X35A0414	30
49	22X35A0415	26
50	22X35A0416	32
51	22X35A0417	15
52	22X35A0418	32
53	22X35A0419	14
54	22X35A0420	31
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		

Class Average mark	21
Number of students performed above the target	29

Attainment Level	% students
1	40%

Number of successful students	54
Percentage of students scored more than target	54%
Attainment level	3

2	50%
3	60%



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication Engineering

Course Outcome Attainment

Name of the faculty: M.NAGARAJU

Academic Year: 2022-23

Branch & Section: ECE - A

Examination:

Course Name: Network analysis & transmission

Year: II

Semester: I

Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level
CO1	3.00		3.00	3.00	3.00
CO2	3.00		3.00	3.00	3.00
CO3	3.00		3.00	3.00	3.00
CO4		3.00	3.00	3.00	3.00
CO5		3.00	3.00	3.00	3.00
CO6		3.00	3.00	3.00	3.00
Internal & University Attainment:			3.00	3.00	
Weightage			25%	75%	
CO Attainment for the course (Internal, University)			0.75	2.25	
CO Attainment for the course (Direct Method)			3.00		

Overall course attainment level

3.00



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(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

ASSIGNMENTS AND REGISTERS

Assignment 1 script link:

<https://drive.google.com/file/d/1XSDJ9xo8yWp1ajv4OXbplyyFi7aUSH6n/view?usp=sharing>

Assignment 2 script link:

<https://drive.google.com/file/d/133qpJM8rsw6JhqWtP-nftwJseAv1-xxg/view?usp=sharing>

Attendance register link:

https://drive.google.com/file/d/1nGd6DjJ3YluVoozrYToT-CioR0h_ZF3D/view?usp=sharing