Sri Indu Institute of Engineering & Technology

Recognized Under 2(f) of UGC Act 1956
Approved by AICTE, New Delhi
Affiliated to JNTUH, Hyderabad.

COURSE FILE

ON

Data Communications and Networks

Course Code – EC502PC

III B.Tech I-SEMESTER

A.Y.: 2022-2023

Prepared by

Mr.Y.RAJU
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(Vill), Ibrahimpatnam
R.R. Dist. Telangana-501 510.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Academic Year	2022-2023
Course Title	Data Communications and Networks
Course Code	EC502PC
Programme	B. Tech
Year & Semester	III year I-semester
Branch & Section	ECE-A
Regulation	R18
Course Faculty	Y.RAJU , Assistant Professor

Index of Course File

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.

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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

III YEAR COURSE STRUCTURE AND SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

III YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	EC501PC	Microprocessors & Microcontrollers	3	1	0	4
2	EC502PC	Data Communications and Networks	3	1	0	4
3	EC503PC	Control Systems	3	1	0	4
4	SM504MS	Business Economics & Financial Analysis	3	0	0	3
5		Professional Elective - I	3	0	0	3
6	EC505PC	Microprocessors & Microcontrollers Lab	0	0	3	1.5
7	EC506PC	Data Communications and Networks Lab	0	0	3	1.5
8	EN508HS	Advanced Communication Skills Lab	0	0	2	1
9	*MC510	Intellectual Property Rights	3	0	0	0
		Total Credits	18	3	8	22

III YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	EC601PC	Antennas and Propagation	3	1	0	4
2	EC602PC	Digital Signal Processing	3	1	0	4
3	EC603PC	VLSI Design	3	1	0	4
4		Professional Elective - II	3	0	0	3
5		Open Elective - I	3	0	0	3
6	EC604PC	Digital Signal Processing Lab	0	0	3	1.5
7	EC605PC	e – CAD Lab	0	0	3	1.5
8	EC606PC	Scripting Languages Lab	0	0	2	1
9	*MC609	Environmental Science	3	0	0	0
		Total Credits	**18**	**3**	**8**	**22**

***MC - Environmental Science – Should be Registered by Lateral Entry Students Only.**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective – I

EC511PE	Computer Organization & Operating Systems
EC512PE	Error Correcting Codes
EC513PE	Electronic Measurements and Instrumentation

Professional Elective – II

EC611PE	Object Oriented Programming through Java
EC612PE	Mobile Communications and Networks
EC613PE	Embedded System Design

EC502PC: DATA COMMUNICATIONS AND NETWORKS

B.Tech. III Year I Semester

L	T	P	C
3	1	0	4

Pre-requisite: Digital Communications

Course Objectives:

1. To introduce the Fundamentals of data communication networks
2. To demonstrate the Functions of various protocols of Data link layer.
3. To demonstrate Functioning of various Routing protocols.
4. To introduce the Functions of various Transport layer protocols.
5. To understand the significance of application layer protocols

Course Outcomes: Upon completing this course, the student will be able to

1. Know the Categories and functions of various Data communication Networks
2. Design and analyze various error detection techniques.
3. Demonstrate the mechanism of routing the data in network layer
4. Know the significance of various Flow control and Congestion control Mechanisms
5. Know the Functioning of various Application layer Protocols.

UNIT - I:

Introduction to Data Communications: Components, Data Representation, Data Flow, Networks- Distributed Processing, Network Criteria, Physical Structures, Network Models, Categories of Networks Interconnection of Networks, The Internet - A Brief History, The Internet Today, Protocol and Standards- Protocols, Standards, Standards Organizations, Internet Standards. Network Models, Layered Tasks, OSI model, Layers in OSI model, TCP/IP Protocol Suite, Addressing Introduction, Wireless Links and Network Characteristics, WiFi: 802.11 Wireless LANs -The 802.11 Architecture,

UNIT - II:

Data Link Layer: Links, Access Networks, and LANs- Introduction to the Link Layer, The Services Provided by the Link Layer, Types of errors, Redundancy, Detection vs Correction, Forward error correction Versus Retransmission Error-Detection and Correction Techniques, Parity Checks, Check summing Methods, Cyclic Redundancy Check (CRC) , Framing, Flow Control and Error Control protocols , Noisy less Channels and Noisy Channels, HDLC, Multiple Access Protocols, Random Access ,ALOHA, Controlled access, Channelization Protocols. 802.11 MAC Protocol, IEEE 802.11 Frame

UNIT - III:

The Network Layer: Introduction, Forwarding and Routing, Network Service Models, Virtual Circuit and Datagram Networks-Virtual-Circuit Networks, Datagram Networks, Origins of VC and Datagram Networks, Inside a Router-Input Processing, Switching, Output Processing, Queuing, The Routing Control Plane, The Internet Protocol(IP):Forwarding and Addressing in the Internet- Datagram format, Ipv4 Addressing, Internet Control Message Protocol(ICMP), IPv6

UNIT - IV:

Transport Layer: Introduction and Transport Layer Services : Relationship Between Transport and Network Layers, Overview of the Transport Layer in the Internet, Multiplexing and Demultiplexing, Connectionless Transport: UDP -UDP Segment Structure, UDP Checksum, Principles of Reliable Data Transfer-Building a Reliable Data Transfer Protocol, Pipelined Reliable Data Transfer Protocols, Go-Back-N(GBN), Selective Repeat(SR), Connection Oriented Transport: TCP - The TCP Connection, TCP Segment Structure, Round-Trip Time Estimation and Timeout, Reliable Data Transfer, Flow Control, TCP Connection Management, Principles of Congestion Control - The Cause and the Costs of Congestion, Approaches to Congestion Control

UNIT - V:

Application Layer:

Principles of Networking Applications – Network Application Architectures, Processes Communicating, Transport Services Available to Applications, Transport Services Provided by the File Transfer: FTP,- FTP Commands and Replies, Electronic Mail in the Internet- STMP, Comparison with HTTP, DNS-The Internet's Directory Service – Service Provided by DNS, Overview of How DNS Works, DNS Records and messages.

TEXTBOOKS:

1. Computer Networking A Top-Down Approach – Kurose James F, Keith W, 6th Edition, Pearson.
2. Data Communications and Networking Behrouz A. Forouzan 4th Edition McGraw-Hill Education

REFERENCES:

1. Data communication and Networks - Bhusan Trivedi, Oxford university press, 2016
2. Computer Networks -- Andrew S Tanenbaum, 4th Edition, Pearson Education
3. Understanding Communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning.

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

COs and Mapping with PO/PSO

Course :Data Computer Networks(C312) **Class:III ECE A**

Course Outcomes

After completing this course the student will be able to:

C312.1: Explain conceptual foundation for study of data communication using layered architure (Knowledge)

C312.2: Analyze network Interface protocol and Design Performance issues in MAC in DLL (Analysis**)**

C312.3 : Evaluate the functioning of routing algorithm and internetworking .(knowledge)

C312.4: Analyze reliable transmission and analyzer the performance of TCP protocols.(Knowledge)

C312.5: Demonstrate the significance of variouse flow control and congestion control mechanisum (Analysis)

C312.6: Analyzer the featues and operation of various application layer protocol such as HTTP,DNS &STMP(knowledge)

Mapping of course outcomes with program outcomes:

High-3 Medium -2 Low-1

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02
C312.1	3	-	-	-	-	-	-	2	-	3	3	-	1	1
C312.2	2	2	2	-	-	-	-	2	-	3	-	2	2	2
C312.3	2	2	-	-	-	-	-	-	-	2	2	2	2	1
C312.4	2	-	-	-	-	-	-	2	-	2	2	-	1	1
C312.5	2	-	-	-	-	-	-	-	-	2	-	3	2	2
C312.6	-	-	-	-	-	-	-	-	-	-	-	-	2	2
C312	2.2	2	2	-	-	-	-	2	-	2.4	2.3	2.3	1.67	1.5

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Course : Data Communications and Networks(C312) **Class: III ECE**

PROGRAM OUTCOMES(POs)

1.ENGNEERING KNOWLEDGE: Apply the knowledge of mathematics, scince , engneering funam entals, and an engneering specializatio to the solution of complex engineering problem.

2.PROBLEM ANALYSIS : identify ,formulate ,research literature, and analyze compex engineering problem reaching substantiaions conclusions using first principles of mathmatics, natural scince and engneering scinces.

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

8. **ETHICS**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

10.COMMUNICATION: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehendand write effectivereports 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 leaderin 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.

PROGRAM SPECIFIED OUTCOMES(PSOs

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.

CO-PO mapping Justification

C312.1: Explain conceptual foundation for study of data communication using layered architecture.

	Justification
PO1	Student knows the function of various layers of network model.
PO8	The study of data communication, as covered in often involves the transmission and processing of sensitive information.
PO10	Students can able to understand communication concept and techniques in the layered Architecture.
PO11	Understanding the layered architecture contributes to the application of engineering and management principles in multidisciplinary environments.
PSO1	Design Skills in Embedded Systems and VLSI by providing students with the knowledge and skills necessary for designing, analyzing, and developing economical systems.
PSO2	Software Usage by providing students with the knowledge and skills to investigate and solve engineering problems using MATLAB, Keil, and Xilinx.

C312.2: Analyze network Interface protocol and Design Performance issues in MAC in DLL

	Justification
PO1	Students acquire knowledge on various types of MAC Mechanisms
PO2	The statement reflects the application of these problem analysis skills to real-world networking challenges.
PO3	To propose solutions for complex engineering problems, considering public health and safety, as well as cultural, societal, and environmental considerations.
PO8	The ethical considerations ensure that the resulting solutions contribute positively to society and adhere to the highest standards of professional conduct.
PO10	Students can able to understand and differentiate between TDMA & FDMA.
PO12	Adopting to technological changes, and independently learning to address evolving

C312.3: Evaluate the functioning of routing algorithm and internetworking.

	Justification
PO1	Get the knowledge on protocols and routing processes.
PO2	Students, using their problem analysis skills, will identify, formulate, and analyze complex engineering problems related to routing and internetworking.
PO10	Students can able to develope subnetworking and routing mechanism skills.
PO11	Effective project planning, resource management, risk mitigation, team collaboration, cost management, and leadership in the dynamic field of network infrastructure.
PO12	The proactive pursuit of knowledge to stay relevant in the ever-evolving field of networking.
PSO1	Improve the functioning of routing systems, applying principles of economical system design in the areas of Embedded Systems and VLSI.
PSO2	Propose solutions to engineering problems related to routing, demonstrating their proficiency in software usage for problem-solving in networking contexts.

C312.4: Analyze reliable transmission and analyze the performance of TCP protocols

	Justification
PO1	Get the knowledge of to the different types of TCP protocols
PO8	Students will actively apply ethical considerations to ensure responsible, transparent, and secure communication in the field of networking.
PO10	Easily evaluate the 6unctioning of flow control and congestion control.
PO11	Implementation of reliable data transmission and optimized TCP protocols in network projects.
PSO1	Improves the functioning of communication systems, applying principles of economical system design in the areas of Embedded Systems and VLSI
PSO2	Problems in the domain of data transmission and protocol performance

C312.5: Analyze the features and operation of various application layer protocol such as Http, DNS &STMP.

	Justification
PO1	Get the knowledge about transport protocols and application layers.
PO10	Easily evaluate the applications of each layers in the network.
PO12	All reflect the qualities of a life-long learner in the context of technological change.
PSO1	Design Skills, particularly in the areas of Embedded Systems and VLSI design and development of economical systems in these specialized domains.
PSO2	Effectively utilize and implement protocols for communication and networking

C312.6: Analyze the features and operation of various application layer protocol such as Http, DNS &STMP

	Justification
PSO1	Informed decisions that contribute to the development of economical systems in n these specialized domains.
PSO2	Simulate, optimize, and implement software solutions for protocols like HTTP, DNS, and SMTP in a variety of engineering contexts

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

ACADEMIC CALENDAR 2022-23

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

I SEM

S. No	Description	Duration	
		From	To
1	Commencement of I Semester classwork	**09.09.2022**	
2	1st Spell of Instructions (including Dussehra Recess)	09.09.2022	10.11.2022 (9 Weeks)
3	Dussehra Recess	03.10.2022	08.10.2022 (1 Week)
4	First Mid Term Examinations	11.11.2022	17.11.2022 (1 Week)
5	Submission of First Mid Term Exam Marks to the University on or before	24.11.2022	
6	2nd Spell of Instructions	18.11.2022	12.01.2023 (8 Weeks)
7	Second Mid Term Examinations	16.01.2023	21.01.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	23.01.2023	28.01.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	30.01.2023	
10	End Semester Examinations	30.01.2023	11.02.2023 (2 Weeks)

Note: No. of Working/ instructional days: 92

II SEM

S. No	Description	Duration	
		From	To
1	Commencement of II Semester classwork	**13.02.2023**	
2	1st Spell of Instructions	13.02.2023	08.04.2023 (8 Weeks)
3	First Mid Term Examinations	10.04.2023	15.04.2023 (1 Week)
4	Submission of First Mid Term Exam Marks to the University on or before	22.04.2023	
5	2nd Spell of Instructions (including Summer Vacation)	17.04.2023	24.06.2023 (10 Weeks)
6	**Summer Vacation**	15.05.2023	27.05.2023 (2 Weeks)
7	Second Mid Term Examinations	26.06.2023	01.07.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	03.07.2023	08.07.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	08.07.2023	
10	End Semester Examinations	10.07.2023	22.07.2023 (2 Weeks)

Note: No. of Working/ instructional days: 90

REGISTRAR

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Class Timetable

CLASS: III-B.Tech ECE-A **A.Y:2022-23** **SEMESTER: I** **LH: C-201**

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	DCN	IPR	CS	LIB	LUNCH	MPMC LAB / DCN LAB		
TUE	CS	MPMC	EMI	DCN		CYB	BEFA	SPORTS
WED	CYB	MPMC(T)/DCN(T)	CS	EMI		DCN LAB / MPMC LAB		
THU	EMI	DCN	CO-CU/DAA			IPR	MPMC	CS(T)/MPMC(T)
FRI	CS	BEFA	EMI	MPMC		DCN(T)/CS(T)	ACS LAB	
SAT	MPMC	IPR	MPMC(ADJUNCT)			BEFA	DCN	COUN

*(T) – Tutorial Concern Faculty

Course Code	Course Name	Name of the Faculty	Course Code	Course Name	Name of the Faculty
EC501PC	MPMC- Microprocessors & Microcontrollers	I.Venu	EC505PC	MPMC LAB- Microprocessors & Microcontrollers Lab	I.Venu/K.Srikanth/P.Srilatha
EC502PC	DCN-Data Communications and Networks	Y.Raju	EC506PC	DCN LAB- Data Communications and Networks Lab	J.Anand Rao/ M.Ganesh/Y.Raju
EC503PC	CS-Control Systems	K.Srikanth	EN508HS	ACS LAB- Advanced Communication Skills Lab	D.Ananda Rao
SM504MS	BEFA- Business Economics & Financial Analysis	K V Nagamani	*MC510	IPR-Intellectual Property Rights	S.Srinivas
			MPMC(ADJUNCT)	G.Chandrasekhar	
EC513PE	EMI-Electronic Measurements and Instrumentation (PE-I)	M.Ganesh	LIB	Library	B.Jyothirmai/S.Alekhya
			COUN	Counseling	Dr.S.Suresh/S.Alekhya/M.Ganesh
*CYB	Cyber Security	T.Divya	CO-CU/DAA	Co-Curricular/Dept.Assc.Act.	M.Ganesh/S.Naresh/P.KrishnaRao
			SPORTS	Sports	M.Ganesh/K.Padma

Class Incharge

Head of the Department

Head of the Department
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LESSON PLAN

Programme: B.Tech	Academic Year: 2022-23
Year: III	Semester: I
Course Title: DCCN	Course Code: EC502PC
Name of Faculty: Y.RAJU	

Unit-I Syllabus

Introduction to Data Communications: Components, Data Representation, Data Flow, Networks- Distributed Processing, Network Criteria, Physical Structures, Network Models, Categories of Networks Interconnection of Networks, The Internet - A Brief History, The Internet Today, Protocol and Standards- Protocols, Standards, Standards Organizations, Internet Standards. Network Models, Layered Tasks, OSI model, Layers in OSI model, TCP/IP Protocol Suite, Addressing Introduction, Wireless Links and Network Characteristics, WiFi: 802.11 Wireless LANs -The 802.11 Architecture.

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Introduction to Data communications,Components	**T1**	**BB**
1	Data Representation, Data Flow	**T1**	**BB**
2	Networks- Distributed Processing, Network Criteria	**R1**	**BB**
1	Physical Structures, Network Models	**R1**	**BB**
2	Categories of Networks Interconnection of Networks, The Internet - A Brief History	**R1**	**BB,PPT**
1	The Internet Today, Protocol and Standards	**R1**	**BB**
1	Network Models, Layered Tasks, OSI model	**R1**	**BB**
1	Layers in OSI model,	**R1**	**BB**
2	TCP/IP Protocol Suite	**R1**	**BB**
2	Wireless Links and Network Characteristic	**R1**	**BB**
1	WiFi: 802.11 Wireless LANs -The 802.11 Architecture	**R1**	**BB,PPT**
Gap beyond syllabus(if any):			
Gap within the syllabus(if any)			
Course Outcome 1: Student able to compare the layers of the OSI model and TCP/IP.			

*Session Duration: 50 minutes
*Total Number of Hours/Unit: 15

Unit-II Syllabus

Data Link Layer: Links, Access Networks, and LANs- Introduction to the Link Layer, The Services Provided by the Link Layer, Types of errors, Redundancy, Detection vs Correction, Forward error correction Versus Retransmission Error-Detection and Correction Techniques, Parity Checks, Check summing Methods, Cyclic Redundancy Check (CRC) , Framing, Flow Control and Error Control protocols , Noisy less Channels and Noisy Channels, HDLC, Multiple Access Protocols, Random Access ,ALOHA, Controlled access, Channelization Protocols. 802.11 MAC Protocol, IEEE 802.11 Frame.

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Introduction to Data Link Layer	T1	BB
1	The Services Provided by the Link Layer	T1	BB
1	Types of errors, Redundancy	R1	BB
1	Detection vs Correction	R1	BB
1	Forward error correction Versus Retransmission Error-Detection and Correction Techniques	R1	BB,PPT
1	Parity Checks, Check summing Methods	R1	BB
1	Framing	R1	BB
1	Flow Control and Error Control protocols	R1	BB
1	Noisy less Channels and Noisy Channels	R1	BB
1	HDLC	R1	BB,PPT
1	Multiple Access Protocols, Random Access	R1	BB
1	ALOHA, Controlled access,	R1	BB
1	Channelization Protocols	R1	BB
1	802.11 MAC Protocol	R1	BB
1	IEEE 802.11 Frame.	R1	BB,PPT

Gap beyond syllabus (if any):

Gap within the syllabus (if any)

Course Outcome 1: Student able to Identify different MAC mechanism in DLL

*Session Duration: 50 minutes

*Total Number of Hours/Unit: 15

Unit -III Syllabus

The Network Layer: Introduction, Forwarding and Routing, Network Service Models, Virtual Circuit and Datagram Networks-Virtual-Circuit Networks, Datagram Networks, Origins of VC and Datagram Networks, Inside a Router-Input Processing, Switching, Output Processing, Queuing, The Routing Control Plane, The Internet Protocol(IP):Forwarding and Addressing in the Internet- Datagram format, Ipv4 Addressing, Internet Control Message Protocol(ICMP), IPv6

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Introduction Network Layer	T1	BB
2	Forwarding and Routing	T1	BB
2	Network Service Models	T1	BB
2	Virtual Circuit Datagram Networks	T1	BB
2	Datagram Networks	R1	BB
1	Origins of VC and Datagram Networks	T1	BB
1	Inside a Router-Input Processing, Switching, Output Processing, Queuing	T1	BB,PPT
2	The Routing Control Plane	T1	BB
1	Forwarding and Addressing in the Internet	R1	BB
1	Ipv4 Addressing	R1	BB
1	Internet Control Message Protocol(ICMP), IPv6	T1	BB
1	IPv6 Addressing	T1	BB
Gap beyond syllabus(if any):			
Gap within the syllabus(if any):			
Course Outcome 1 : Student able to Analyze the functioning of routing algorithm and internetworking			

*Session Duration: 50minutes

*Total Number of Hours/Unit: 15

Unit-IV Syllabus

Transport Layer: Introduction and Transport Layer Services : Relationship Between Transport and Network Layers, Overview of the Transport Layer in the Internet, Multiplexing and Demultiplexing, Connectionless Transport: UDP -UDP Segment Structure, UDP Checksum, Principles of Reliable Data Transfer-Building a Reliable Data Transfer Protocol, Pipelined Reliable Data Transfer Protocols, Go- Back-N(GBN), Selective Repeat(SR), Connection Oriented Transport: TCP - The TCP Connection, TCP Segment Structure, Round-Trip Time Estimation and Timeout, Reliable Data Transfer, Flow Control, TCP Connection Management, Principles of Congestion Control - The Cause and the Costs of Congestion, Approaches to Congestion Control

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Introduction to Transport Layer Services	R1	**BB**
1	Relationship Between Transport and Network Layers	R1	**BB**
1	Overview of the Transport Layer in the Internet	T1	**BB**
1	Multiplexing and Demultiplexing	T1	**BB**
1	UDP Segment Structure	T1	**BB**
1	UDP Checksum	T1	**BB**
1	Principles of Reliable Data Transfer-Building a Reliable Data Transfer Protocol	T1	**BB**
1	Pipelined Reliable Data Transfer Protocols	T1	**BB**
1	Go- Back-N(GBN), Selective Repeat(SR)	R1	**BB**
1	Connection Oriented Transport: TCP - The TCP Connection	T1	**BB,PPT**
1	TCP Segment Structure	R1	**BB**
1	Round-Trip Time Estimation and Timeout	T1	**BB**
1	Reliable Data Transfer, Flow Control	R1	**BB**
Gap beyond syllabus(if any):			
Gap within the syllabus(if any)			
Course Outcome 1: Student able to : Analyze reliable transmission and analyze the performance of TCP protocols.			

*Session Duration: 50minutes

*Total Number of Hours/Unit: 15

Unit-V Syllabus

Application Layer: Principles of Networking Applications – Network Application Architectures, Processes Communicating, Transport Services Available to Applications, Transport Services Provided by the File Transfer: FTP,- FTP Commands and Replies, Electronic Mail in the Internet- STMP, Comparison with HTTP, DNS-The Internet's Directory Service – Service Provided by DNS, Overview of How DNS Works, DNS Records and messages.

No. of Sessions Planned	Topics	Reference	Teaching Method/ Aids
1	Introduction to Application layer	R1	BB
1	Network Application Architectures, ProcessesCommunicating	T1	BB
1	Transport Services Available to Applications	T1	BB
1	Transport Services Provided by the File Transfer: FTP	T1	PPT
1	FTP Commands and Replies	R1	BB
1	Electronic Mail in the Internet	T1	PPT
1	STMP, Comparison with HTTP	T1	BB
1	DNS-The Internet's Directory Service	T1	BB
1	Overview of How DNS Works	R1	BB
1	DNS Records and messages	R1	BB
Gap beyond syllabus(if any):			
Gap within the syllabus(if any)			
Course Outcome 1 Student able to Analyze the features and operation of various applicationlayer protocol such as HTTP,DNS &STMP			

*Session Duration: 50minutes

*Total Number of Hours/Unit: 10

TEXT BOOKS

- T1. Data Communications and Networking — Behrouz A. Forouzan, Fifth Edition TMH,2013.

T2. Computer Networks — Andrew S Tanenbaum, 4th Edition, Pearson Education

REFERENCE BOOKS

R1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.

R2 Understanding communications and Networks, 3rd Edition, W.A.Shay, Cengage Learning.

R3. Introduction to Computer Networks and Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin, CRC Press.

R4.Computer Networks, L.L.Peterson and B.S.Davie,4th edition, ELSE VIER.

R5. Computer Networking: A Top-Down Approach Featuring the Internet, James F.Kurose,K.W.Ross,3rd Edition, Pearson Education.

WEB REFERENCES

W1: https://www.studytonight.com/computer-networks/bounded-transmission-media

W2 : https://www.geeksforgeeks.org/multiple-access-protocols-in-computer-network/

W3: https://www.computer-networking.info/1st/html/network/network.html

W4: https://www.geeksforgeeks.org/introduction-of-internetworking/

W5:https://www.tutorialride.com/computer-network/application-layer-protocols-in-computer-network.htm

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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/

Lecture notes

Unit 1 link:
https://drive.google.com/file/d/1N8silGZCUijL3bPJFDwSGsbtK1FSbaia/view

Unit 2 link:
https://drive.google.com/file/d/1nnlBg9T1U8oYVUCwa8v1EJVHt8zAfFiQ/view

Unit 3 link:
https://drive.google.com/file/d/1sUztE7CloLn9RZHqrCxn6oemF-TaGPnK/view

Unit 4 link:
https://drive.google.com/file/d/1bnyphqpqO_R5VNAcnXpW9jPlKGkYamUr/view

Unit 5 link:
https://drive.google.com/file/d/1v0xNLmyGVOUF4iaRhn6_457vYQNWY78t/view

Power point presentation

PPT link: https://drive.google.com/file/d/1LrwXI7deTRkG03cudc-L-_kp9XFgV7ax/view

Code No: 155AV **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2021 DATA COMMUNICATIONS AND NETWORKS
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions All questions carry equal marks

\- - -

1.a) How does information get passed from one layer to the next in the Internet model? Explain.
b) Illustrate how CDMA works in wireless LAN. [7+8]

2.a) What is Cyclic Code? Explain the CRC error detection technique. Give
b) a detail note on the Random Access protocols. [8+7]

3.a) Explain the functionality of ICMP protocol.
b) What is the format of IPv4 header? Describe the significance of each field. [7+8]

4.a) Describe why an application developer might choose to run an application over UDP rather than TCP.
b) Demonstrate three way handshake connection establishment in TCP. [7+8]

5.a) Is an application's architecture different from the network architecture? Defend your answer.
b) What is DNS? Explain how DNS works. [8+7]

6.a) Explain the categories of networks.
b) Demonstrate Go Back-N sliding window Protocol with an example. [7+8]

7.a) Explain IEEE 802.11 standard for Ethernet with the help of frame format.
b) Differentiate between pure ALOHA and slotted ALOHA. [8+7]

8. Write a short note on:
a) SMTP
b) HTTP. [8+7]

---ooOoo---

Code No: 155AV **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, February - 2022
DATA COMMUNICATIONS AND NETWORKS
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1. During the communication, how the various layers exchange information in OSI Model. Describe with the help of suitable diagram. [15]

2. Explain the TCP/IP architecture. Show the comparison with the OSI model with the help of schematic diagram. [15]

3. Consider a message D, presented by the following polynomial $x^{19} + x^{17} + x^{16} + x^{13} + x^{12} + x^{11} + x^9 + x^5 + x^2 + 1$, which is transmitted using the standard Cyclic Redundancy Check (CRC) method. The generator polynomial is $x^7 + x^5 + x^4 + x^3 + x^2 + 1$. Find the CRC and show the actual bit string to be transmitted. [15]

4.a) Differentiate between Pure ALOHA and slotted ALOHA protocol.
b) In a digital system with 8 input links are multiplexed using STDM. Each input source is creating 1024 bits per second. Each frame contains 8 bits from each source and adds 1 bit as a framing bit. Compute the number of frame transmitted per second and the data capacity of the link. [7+8]

5.a) Explain the network service model with a neat sketch.
b) Explain the format of IPV4 addressing. [8+7]

6. Illustrate in detail about the concept of forwarding and addressing in the internet. [15]

7.a) Discuss about the Round-Trip Time Estimation and Timeout.
b) Why does UDP exist? Would it not have been enough to just let user processes send raw IP packets? Justify answer. [8+7]

8. Explain the Transport Services Available to Applications. [15]

---ooOoo---

Code No: 155AV **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, August - 2022
DATA COMMUNICATIONS AND NETWORKS
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1.a) With help of diagram, explain components of data communication? Differentiatebetween Parallel and Serial Transmission.
b) Elicit types of transmission media with their merits and demerits? Elaborate. [9+6]

2.a) Explain the 802.11 Architecture and Protocol Stack.
b) Compare TCP/IP and OSI Reference Models. [10+5]

3 .a) Explain the services provided by the data link layer.
b) What are the advantages of fragmentation of frames is IEEE 802.11? Discuss. [5+10]

4.a) Define CRC? Find whether there are errors in the received code word 1100100101011,when the polynomial is 10101?
b) Why are pipeline protocols used in data link layer? Illustrate Go back N with the helpof an example. [8+7]

5.a) What are the advantages of multistage switching ? Illustrate though an example.
b) Explain in detail about the different phases of Virtual – Circuit networks. [8+7]

6.a) Define link state packet. Explain how link state Routing operates?
b) Explain IP address classes and list their purpose. [9+6]

7.a) How does TCP's congestion control algorithm work? Explain with the help of an illustration.
b) Explain UDP operation. Also enlist the uses of UDP. [8+7]

8.a) What is the essence of DNS (Domain Name system)? How does it map to IP address?
b) Explain Domain Resource Records.
c) Explain about HTTP reply header. [5+5+5]

---oo0oo---

Code No: 155AV **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, September - 2021
DATA COMMUNICATIONS AND NETWORKS
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1.a) Draw and explain the OSI architecture.
b) Draw and explain the 802.11 architecture. [8+7]

2.a) How to convert a digital signal to analog? Explain with the help of an example.
b) What is meant by Transmission media? Explain the types with a neat diagram for each. [7+8]

3.a) Explain the functioning of FDMA.
b) What are the advantages and disadvantages of Slotted ALOHA? [9+6]

4.a) Calculate and verify the efficiency of Pure ALOHA.
b) What is a collision? How can a collision be detected? Explain about CSMA/ CD. [7+8]

5.a) Explain the frame format of ICMP.
b) Differentiate between static routing and dynamic routing. [8+7]

6.a) Imagine, multiple requests are raised from various clients. How can these requests be handled? Explain in detail.
b) Differentiate between VC network and Datagram Network. [8+7]

7.a) Explain how flow control and buffering would be handled by transport layer.
b) Explain the functioning of RPC. [8+7]

8.a) Draw and explain the steps in looking up a URL when a CDN is used.
b) Draw and explain about the WAP protocol stack. [7+8]

---ooOoo---

Sri Indu Institute of Engineering & Technology

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

I- Mid Examinations, November-2022

Set – I

Year & Branch: **III ECE**

Subject: **Data Communications and Networks(A, B&C)**

Time: 1hr

Date: 11-11-2022 AN

Max. Marks: **10**

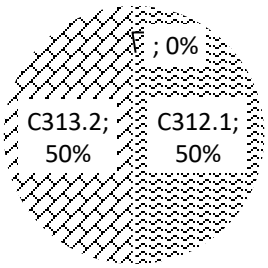
Answer any **TWO** Questions. All Questions Carry Equal Marks

2*5=10marks

1	What is network Topology? What are its various types of Topologies?	(5)	C312.1	(Synthesis)
2	What is OSI reference model? Explain functions and protocols of each layer?	(5)	C312.1	(Synthesis)
3	What is WLAN? Explain about IEEE 802.11 Architecture	(5)	C312.2	(Synthesis)
4	What is Error Detection &Correction, Redundancy, Block Coding?	(5)	C312.2	(Synthesis)

Question Paper Mapping with BT

Question Paper Mapping with CO's



Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510
II- Mid Examinations, January-2022

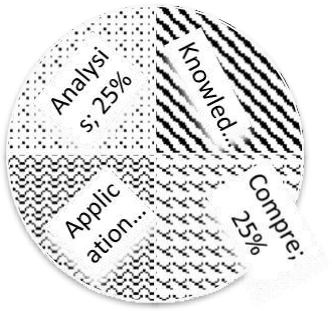
Set – I

Year & Branch: **III ECE** Date: 20/01/2023
Subject: **Data Communication and Network(A, B&C)** Max. Marks: **10** Time: 1hr

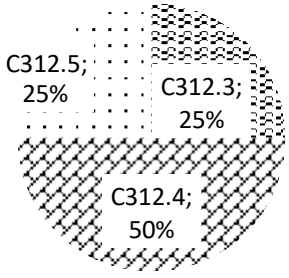
Answer any **TWO** Questions. All Questions Carry Equal Marks
2*5=10marks

1	Discuss Major difference between IPV4 and IPV6?	(5)	C312.3	(Knowledge)
2	Explain about Quality of Service (QOS)?	(5)	C312.4	(Comprehension)
3	Explain about Electronic Mail? Its Components and Services provided by Email System?	(5)	C312.5	(Comprehension)
4	What is SCTP ? Explain Services, Features?	(5)	C312.4	(Synthesis)

Question Paper Mapping with BT



Question Paper Mapping with CO's



Sri Indu Institute of Engineering & Technology

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

B-Tech I - Mid Examinations, November -2022

Objective Type Exam

Year & Branch: III –ECE -A, B&C **Date: 11-11-2022 AN**

subject: DCN Max. Marks: 10 Time: 20 mins

Name:..... Roll……..

Choose the correct answers.

1. The network layer is concerned with _____ of data. [ ]
   a) bits b) frames c) packets d) bytes
2. In a ___ topology, if there are n devices in a network, each device has n-1ports for cable._____? [ ]
   a) Bus b) Mesh c) Ring d) Star
3. Where does bridge operate in OSI model? [ ]
   a) Application layer b) Data link layer c) Physical layer d) Both a and b
4. In a ring topology, the computer in possession of the_____can transmit data? [ ]
   a) Pocket b) Access method c) Data d) Token
5. A ____ is a standard set of rules that determines how computers communicate with each other across networks.? [ ]
   a) Protomol b) Protochol c) Protocool d) Protocol
6. The advantage of a LAN is_____? [ ]
   a) Saving all your data b) Accessing the web c) Backing up your data
   d) Sharing peripherals
7. IP addresses are converted to_____? [ ]
   a) A hexadecimal string b) A hierarchy of domain names
   c) Alphanumeric string d) A binary string
8. Encryption and Decryption are the functions of layers._____? [ ]
   a) Transport b) Session c) Presentation d) Physical
9. Which layer 4 protocol is used for a Telnet connection?_____? [ ]
   a) TCP b) IP c) UDP d) TCP/IP
10. The data link layer takes the packets from_____and encapsulates them into frames for transmission. [ ]

a) a) network layer b) physical layer c) transport layer d) application layer

I. Fill in the Blanks

11. Two or more computers connected to each other for sharing informationform a _____
12. MAN stands for _____
13. Communication between a computer and a keyboard involves _____ transmission.
14. Bluetooth is an example of _____
15. Repeaters operate in which layer of OSI model _____
16. How long is an IPv6 address _____?
17. Which of the following terms is associated with network _____?
18. A _____ is a computer network that usually spans a city or a largecampus.
19. Which of the following protocols uses both TCP and UDP _____?
20. A communication network which is used by large organizations over regional, national or global area is called _____

Sri Indu Institute of Engineering & Technology

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

B-Tech II- Mid Examinations, Januar 2022

Objective Type Exam

Year & Branch: III –ECE -A, B&C **Date: 20/01/2023**

Subject: DCN Max. Marks: 10 Time: 20 mins

Name: …….. Roll No……..

Choose the correct answers.

1. What is the minimum number of wires needed to send data over it serial communication link layer_____? [ ]

   a) 1 b) 2 c) 3 d) 4

2. Which data communication method is used to send data over a serialcommunication link_____? [ ]

   a) simplex b) half duplex c) full duplex d) all of these

3. Which of the following statements is incorrect? [ ]

   a) teleprocessing combing telecommunication and DP techniques in online activities.

   b) Multiplexers are designed to accept data from several I/O devices and transmit a unified stream of data on one communication line.

   c) a half-duplex line is a communication line in which data can move in two directions, but not the same time.

   d) batch processing is the preferred processing mode for telecommunication operations.

4. The interactive transmission of data within a time sharing system may be best suited to [ ]

   a) simplex line b) half duplex lines c) full duplex line d) bi-flex lines

5. **Teleprinters….**? [ ]

   a) are used for printing at remote locations, not for input.

   b) offer both high-speed operation and a variety of formatting controls.

   c) have a printer for output and a keyboard for input

   d) are same as teletypes.

6. Which of the following is an example of a bounded medium_____?

   [ ]

   a) coaxial cable b) wave guide c) fiber optic cable d) all of these

7. Coaxial cable has conductors with_____? [ ]

a) a common axis b) equal resistance

c) the same diameter d) none of these

8. The area of coverage of a satellite radio beam is called its_____? [ ]

a) beam width b) circular polarization c) footprint d) identity

9. The amount of uncertainty in a system of the symbol is called_____? [ ]

a) bandwidth b) entropy c) loss d) quantum

10. Buffering is_____? [ ]

1.The process of temporarily storing the data to allow for small variation in device

2.a method to reduce cross-talks

3.storage of data within the transmitting medium until the receiver is ready to receive

4.a method to reduce the routing overhead

I. Fill in the Blanks

11. What is the main difference between synchronous and asynchronous transmission_____

12. The connection between your computer at home and your local ISP is called_____

13. Where does bridge operate in OSI model_____

14. In a ring topology, the computer in possession of the_____can transmit data.

15. A_____is a standard set of rules that determines how computers communicate with each other across networks.

16. The advantage of a LAN is_____

17. IP addresses are converted to_____

18. Encryption and Decryption are the functions of layers _____

19. Which layer 4 protocol is used for a Telnet connection_____

20. Two or more computers connected to each other for sharing information form _____

Sri Indu Institute of Engineering & Technology

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

B-Tech I - Mid Examinations November -2022

Objective Type Exam

Year & Branch: III –ECE -A, B&C **Date: 11-11-2022 AN**

subject: DCN

ANSWER KEY

Descriptive paper key link:

https://drive.google.com/file/d/1UbRqxcC5GnsVfNmAn3j5lW-IMoknyuvd/view?usp=sharing

1. Objective/Quiz Key Paper B

I. Choose the correct alternative:

1. C
2. B
3. B
4. D
5. D
6. D
7. A
8. C
9. A
10. A

2. Fill in the blanks:

1. A network
2. Metropolitan area network
3. Simplex transmission
4. Personal Area Network
5. Layer 1 devices
6. 128 bits
7. Which is associated with network?
8. Modems, switches
9. metropolitan area network
10. DNS

Sri Indu Institute of Engineering & Technology

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B-Tech I - Mid Examinations November -2022

Objective Type Exam

Year & Branch: III –ECE -A, B&C **Date: 20/01/23 (FN)**

Subject: DCN

ANSWER KEY

Descriptive paper key link:

https://drive.google.com/file/d/1J_fQ1FvFiHMPlfy0DxGagel8k0sub2r1/view?usp=sharing

Objective/Quiz Key Paper B

I. Choose the correct alternative:

1. B
2. C
3. D
4. B
5. C
6. D
7. A
8. C
9. B
10. A

2. Fill in the blanks:

1. The data in synchronous transmission.
2. home page
3. Data link layer
4. Token
5. Protocol
6. Backing up your data
7. Hierarchy of domain names
8. Presentation
9. TCP
10. Network

TUTORIAL TOPICS

SUBJECT: Data Communications and Networks

S.NO	Unit	TOPIC	Number of Sessions Planned	Teaching method/Aids
1.	1	Network Models Layered Tasks,	1	BB
2.		OSI model, Layers in OSI model, TCP/IP Protocol Suite	1	BB
3.	2	The Services Provided by the Link Layer	1	BB
4.		Channelization Protocols. 802.11 MAC Protocol	1	BB
5.	3	Network Service Models	1	BB
6.		Addressing in the Internet- Datagram format	1	BB
7.	4	Relationship Between Transport and Network Layers	1	BB
8.		Connection Oriented Transport: TCP	1	BB
9.	5	Principles of Networking Applications – Network	1	BB
10.		, Overview of How DNS Works,	1	BB
11.		DNS Records and messages.	1	BB

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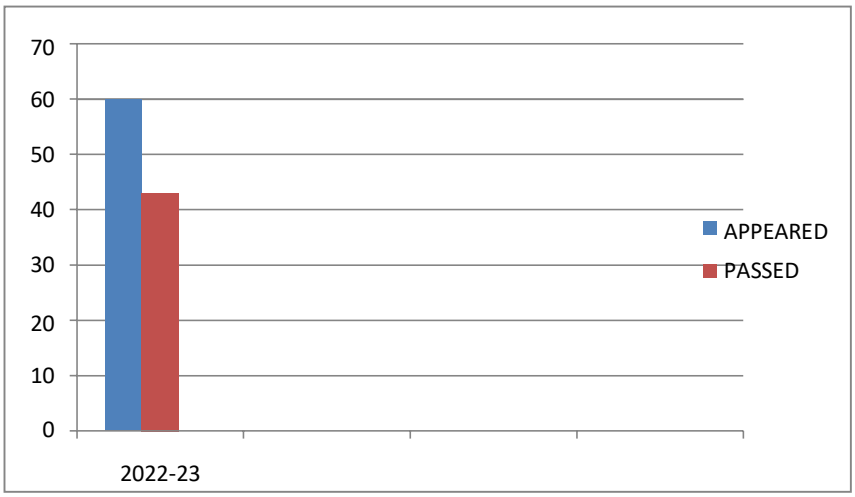
Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510
Website: https://siiet.ac.in/

BATCH ECE-3rd BTECH I SEM ECE-A RESULT ANALYSIS

ACADAMIC YEAR	COURSE NAME	NUMBER OF STUDENTS		QUESTION PAPER SETTING		PASS%
		APPEARED	PASSED	INTERNAL	EXTERNAL	
2022-23	DCCN	60	43	COURSE FACULTY	JNTUH	71.6

DCCN (C311) RESULT ANALYSIS



Course Title	Data Communications and Networks
Course Code	EC502PC
Programme	B.Tech
Year & Semester	III year I-semester, A sec
Regulation	R18
Course Faculty	Y.RAJU , Assistant Professor, ECE

Slow learners:

S No	Roll no	No of backlogs	Internal-I Status	Internal-II Status
1	20X31A0401	4	23	22
2	20X31A0403	5	14	14
3	20X31A0406	4	17	20
4	20X31A0407	3	21	21
5	20X31A0408	3	20	20
6	20X31A0410	5	18	19
7	20X31A0411	4	21	24
8	20X31A0412	5	15	19
9	20X31A0413	4	19	19
10	20X31A0418	8	14	14
11	20X31A0419	4	20	22
12	20X31A0423	3	19	21
13	20X31A0427	3	20	21
14	20X31A0428	4	20	22
15	20X31A0430	4	24	24
16	20X31A0431	5	16	19
17	20X31A0433	3	22	20
18	20X31A0435	3	17	19
19	20X31A0436	5	18	20

20	20X31A0440	4	19	22
22	20X31A0445	4	19	22
23	20X31A0447	3	24	24
24	20X31A0450	4	19	21
25	20X31A0453	4	20	22
26	20X31A0454	5	15	14
27	20X31A0455	4	18	20
28	20X31A0456	5	14	20
30	20X31A0458	3	21	23
31	20X31A0462	3	20	21

Advanced learners:

S.NO	ROLL.NO.	Seminar Topics
1	20X31A0404	1. Network Criteria, PhysicalStructures. 2. OSI model, Layers in OSI model. 3. TCP/IP Protocol Suite. 4. Access Network and LANs. 5. Parity Checks, Check summingMethods. 6. 802.11 MAC Protocol. 7. Switching, Output Processing. 8. Internet Control Message Protocol (ICMP), IPv6. 9. UDP Segment Structure. 10. Comparison with HTTP, DNS.
2	20X31A0409	
3	20X31A0415	
4	20X31A0416	
5	20X31A0420	
6	20X31A0421	
7	20X31A0422	
8	20X31A0425	
9	20X31A0432	
10	20X31A0434	
11	20X31A0437	
12	20X31A0438	
13	20X31A0439	
14	20X31A0442	
15	20X31A0444	
16	20X31A0449	
17	20X31A0452	
18	20X31A0459	
19	20X31A0459	

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510
Website: https://siiet.ac.in/

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	PPLE	NS&C	JAVA
IV ECE-B	DIP	PPLE	NS&C	JAVA	MW&OC
IV ECE-C	PPLE	NS&C	JAVA	MW&OC	DIP

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(Vill), 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)

Name of the faculty : Y.RAJU ECE - A
Branch & Section: DCCN
Course Name:
Academic Year: 2022-23
Examination: I Internal

S.No	HT No.	Q1a	Q1b	Q2a	Q2b	Q3a	Q3b	Q4a	Q4b	Obj1	A1
Max. Marks ==>		**5**		**5**		**5**		**5**		**10**	**5**
1	20X31A0401	5		4						9	5
2	20X31A0402			5				4		9	5
3	20X31A0403							1		8	5
4	20X31A0404	3						3		9	5
5	20X31A0405	4				5				9	5
6	20X31A0406					5				7	5
7	20X31A0407					5		2		9	5
8	20X31A0408					2		5		8	5
9	20X31A0409	5				5				9	5
10	20X31A0410							4		9	5
11	20X31A0411	4						4		8	5
12	20X31A0412			2						8	5
13	20X31A0413			5						9	5
14	20X31A0414			5				5		9	5
15	20X31A0415					5		5		9	5
16	20X31A0416					1		5		8	5
17	20X31A0417			4		4				8	5
18	20X31A0418	3		3						3	5
19	20X31A0419			3		3				9	5
20	20X31A0420					3				9	5
21	20X31A0421					1		5		9	5
22	20X31A0422			5		5				9	5
23	20X31A0423	5								9	5
24	20X31A0424	5		5						9	5
25	20X31A0425			5		5				9	5
26	20X31A0426					5		1		9	5
27	20X31A0427					3		3		9	5
28	20X31A0428					3		3		9	5
29	20X31A0429			3				3		9	5
30	20X31A0430					5		5		9	5

31	20X31A0431					3				8	5
32	20X31A0432					5		4		9	5
33	20X31A0433					4		4		9	5
34	20X31A0434	4		5						9	5
35	20X31A0435	4								8	5
36	20X31A0436	4								9	5
37	20X31A0437	4		5						9	5
38	20X31A0438					5		5		9	5
39	20X31A0439					5		5		9	5
40	20X31A0440							5		9	5
41	20X31A0441					1		5		9	5
42	20X31A0442			5				5		9	5
43	20X31A0444			5				4		9	5
44	20X31A0445							5		9	5
45	20X31A0446					5		5		9	5
46	20X31A0447	5				5				9	5
47	20X31A0448					5		2		8	5
48	20X31A0449	5		5						9	5
49	20X31A0450			5						9	5
50	20X31A0451			5		3				9	5
51	20X31A0452					5		5		9	5
52	20X31A0453	1						5		9	5
53	20X31A0454					2		4		4	5
54	20X31A0455							4		9	5
55	20X31A0456							1		8	5
56	20X31A0458					4		3		9	5
57	20X31A0459	5				5				9	5
58	20X31A0460	5				3				9	5
59	20X31A0461					4		5		9	5
60	20X31A0462	3						5		9	5
Target set by the faculty / HoD		3.00	0.00	3.00	0.00	3.00	0.00	3.00	0.00	6.00	3.00
Number of students performed above the target		17	0	18	0	28	0	30	0	58	60
Number of students attempted		18	0	19	0	33	0	35	0	60	60
Percentage of students scored more than target		94%		95%		85%		86%		97%	100%

CO Mapping with Exam Questions:

CO - 1	Y					Y	Y	Y
CO - 2				Y			Y	Y
CO - 3							Y	Y
CO - 4								
CO - 5								
CO - 6								
% Students Scored >Target %	94%	95%		85%		86%		100%

CO Attainment based on Exam Questions:

CO - 1	94%	90%				86%	97%	100%
CO - 2				85%			97%	100%
CO - 3							97%	100%
CO - 4								
CO - 5								
CO - 6								

CO	Subj	obj	Overall	Level
CO-1	92%	97%	96%	3.00
CO-2	85%	97%	94%	3.00

Attainment Level	
1	40%
2	50%

CO-3		97%	100%	98	3
CO-4					
CO-5					
CO-6					

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 :	Y.RAJU	Academic Year:	2022-23
Branch & Section: Course Name:	ECE - A DCCN	Examination: Year: III	II Internal Semester:

S.N	HT No.	Q1a	Q1b	Q2a	Q2b	Q3a	Q3b	Q4a	Q4b	Obj2	A2
Max. Marks ==>		3	2	5		5		5		10	5
1	20X31A0401			4				4		9	5
2	20X31A0402			4		5				9	5
3	20X31A0403	2	2							8	5
4	20X31A0404					5		4		9	5
5	20X31A0405					4		5		9	5
6	20X31A0406		2					5		7	5
7	20X31A0407		2					5		9	5
8	20X31A0408					4		4		8	5
9	20X31A0409					5		5		9	5
10	20X31A0410		2					5		9	5
11	20X31A0411		5					5		8	5
12	20X31A0412	3				3				8	5
13	20X31A0413	3				3				9	5
14	20X31A0414					5		4		9	5
15	20X31A0415					5		5		9	5
16	20X31A0416		2					5		9	5
17	20X31A0417					4		4		9	5
18	20X31A0418							5		4	5
19	20X31A0419	3				5				9	5
20	20X31A0420					5				9	5
21	20X31A0421					5		2		9	5
22	20X31A0422			5				5		9	5
23	20X31A0423		2					5		9	5
24	20X31A0424					4		4		9	5
25	20X31A0425					4		4		9	5
26	20X31A0426							5		4	5
27	20X31A0427					4		4		8	5
28	20X31A0428			4				4		9	5
29	20X31A0429	3						4		8	5
30	20X31A0430			5				5		9	5
31	20X31A0431							5		9	5
32	20X31A0432	3	1					5		9	5
33	20X31A0433	3				3				9	5
34	20X31A0434			5		5				9	5
35	20X31A0435					5				9	5

36	20X31A0436		2			5				8	5
37	20X31A0437					5		4		9	5
38	20X31A0438			5				5		10	5
39	20X31A0439			5				5		9	5
40	20X31A0440			4		4				9	5
41	20X31A0441					4		5		9	5
42	20X31A0442			5		5				9	5
43	20X31A0444			5		5				9	5
44	20X31A0445					4		4		9	5
45	20X31A0446					5		5		9	5
46	20X31A0447			5		5				9	5
47	20X31A0448					4		4		9	5
48	20X31A0449			5				5		10	5
49	20X31A0450			4				4		8	5
50	20X31A0451			5				5		9	5
51	20X31A0452					5		5		10	5
52	20X31A0453			5				3		9	5
53	20X31A0454							5		4	5
54	20X31A0455					3		5		7	5
55	20X31A0456					5		3		7	5
56	20X31A0458			4		5				9	5
57	20X31A0459					5		5		10	5
58	20X31A0460					5		4		9	5
59	20X31A0461			5				5		9	5
60	20X31A0462			4				4		8	5
Target set by the faculty / HoD		1.80	1.20	3.00	0.00	3.00	0.00	3.00	0.00	6.00	3.00
Number of students performed above the target		7	8	19	0	35	0	44	0	57	60
Number of students attempted		7	9	19	0	35	0	45	0	60	60
Percentage of students scored more than target		100%	89%	100%		100%		98%		95%	100%

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication Engineering

Course Outcome Attainment (University Examinations)

CO Mapping with Exam Questions:

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

CO Attainment based on Exam Questions:

CO - 1										
CO - 2										
CO - 3		89%							95%	100%
CO - 4	100%								95%	100%
CO - 5			100%						95%	100%
CO - 6					100%		98%		95%	100%

CO	Subj	obj	Asgn	Overall	Level
CO-1					
CO-2					
CO-3	89%	95%	100%	95%	3.00
CO-4	100%	95%	100%	98%	3.00
CO-5	100%	95%	100%	98%	3.00
CO-6	99%	95%	100%	98%	3.00

Attainment Level	
1	
2	
3	

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

Percentage of students scored more than target	62%
Attainment level	**3**

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication Engineering

Course Outcome Attainment

Name of the faculty Branch & Section: Course Name:	YRAJU ECE - A DCCN			Academic Year: 2022-23 Examination: I Internal Year: III	
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	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%	
O Attainment for the course (Internal, Universi			0.75	2.25	
CO Attainment for the course (Direct Method)			3.00		

Overall course attainment level **3.00**

Name of the faculty :		Y RAJU	Academic Year:		2022-23
Branch & Section:Course Name:		ECE- ADCCN	Year / Semester:		III / I
S.No	Roll Number	Marks Secured	S.No	Roll Numbe	Marks Secured
1	20X31A0401	35	36	0X31A043	12
2	20X31A0402	18	37	0X31A043	26
3	20X31A0403	-1	38	0X31A043	35
4	20X31A0404	37	39	0X31A043	29
5	20X31A0405	29	40	0X31A044	31
6	20X31A0406	15	41	0X31A044	30
7	20X31A0407	28	42	0X31A044	34
8	20X31A0408	19	43	0X31A044	31
9	20X31A0409	34	44	0X31A044	31
10	20X31A0410	17	45	0X31A044	31
11	20X31A0411	26	46	0X31A044	30
12	20X31A0412	8	47	0X31A044	26
13	20X31A0413	26	48	0X31A044	45
14	20X31A0414	37	49	0X31A045	18
15	20X31A0415	40	50	0X31A045	45
16	20X31A0416	17	51	0X31A045	43
17	20X31A0417	28	52	0X31A045	38
18	20X31A0418	-1	53	0X31A045	5
19	20X31A0419	30	54	0X31A045	18
20	20X31A0420	14	55	0X31A045	-1
21	20X31A0421	28	56	0X31A045	28
22	20X31A0422	36	57	0X31A045	40
23	20X31A0423	19	58	0X31A046	26
24	20X31A0424	26	59	0X31A046	28
25	20X31A0425	30	60	0X31A046	27
26	20X31A0426	29			
27	20X31A0427	27			
28	20X31A0428	34			
29	20X31A0429	28			
30	20X31A0430	30			
31	20X31A0431	11			
32	20X31A0432	31			
33	20X31A0433	27			
34	20X31A0434	36			
35	20X31A0435	18			
Max Marks		75			

attainment level	%students
1	40%
2	50%
3	60%

Class Average mark		26
Number of students performed above the target		37
Number of successful students		60

Percentage of students scored more than target	62%
Attainment level	**3**

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication Engineering

Program Outcome Attainment (from Course)ss

Name of Faculty:	Y .RAJU	Academic	2022-23
Branch & Section:	ECE - A	Year:	III
Course Name	DCCN	Semester:	I

CO-PO mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO	PO10	PO1			PSO
CO1	3	-	-	-	-	-	-	2	-	3	3	-	1	1
CO2	2	2	2	-	-	-	-	2	-	3		2	2	2
CO3	2	2	-	-	-	-	-	-	-	2	2	2	2	1
CO4	2	-	-	-	-	-	-	2	-	2	2	-	1	1
CO5	2	-	-	-	-	-	-	-	-	2	-	3	2	2
	-	-	-	-	-	-	-	-	-	-	-	-	2	2
	2.2	**2**	**2**	-	-	-	-	**2**	-	-	**2.3**	**2.3**	1.67	1.5

CO	**Course Outcome Attainment**	
CO1	3.00	
CO2	3.00	
CO3	3.00	
CO4	3.00	
CO5	3.00	
CO6	3.00	
Overall course attainment level	**3.00**	

PO-ATTAINMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P	PO	PO	PO1	PO12	PS	PSO
CO Attainme nt	**2.20**	**2.00**	**2.00**					**2.00**		**2.40**	**2.30**			**1.50**

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

ASSIGNMENTS AND REGISTERS

Assignment 1 script link:
https://drive.google.com/file/d/1bNfG9f8Xll2m1ORJfs3G0rLuaHlMqmNj/view?usp=sharing

Assignment 2 script link:
https://drive.google.com/file/d/1LUwZ304NPilgwecinzao758SfwPIlyag/view?usp=sharing

Attendance register link:
https://drive.google.com/file/d/1pL5IYG7_4BIRm4vxUC8LGuqTm1eM7ORe/view