INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

ELECTRONICS AND COMMUNICATION ENGINEERING

TUTORIAL QUESTION BANK

Course Title	**TELECOMMUNICATION SWITCHING THEORY AND APPLICATIONS**
Course Code	AEC523
Programme	B.Tech
Semester	V ECE
Course Type	Elective
Regulation	IARE - R16

Course Structure	Theory			Practical	
	Lectures	Tutorials	Credits	Laboratory	Credits
	3	-	3	-	-

Chief Coordinator	Mr. U.Somanaidu, Assistant Professor
Course Faculty	Dr. P Ashok Babu, Professor Mr. U Somanaidu, Assistant Professor Mr. A Karthik, Assistant Professor

COURSE OBJECTIVES

The course should enable the students to:	
I	Learn to consider tele-traffic demands, quality of service, scalability, performance and cost into consideration to develop requirements and architectures.
II	Underlying technologies and applications including wireless communications, including mobility, optical communications, wavelength routing, packet networks and the Internet.
III	Coordinated with CS 440, computer networks, where communications protocols and the TCP/IP protocols suite are addressed.

COURSE OUTCOMES (COs):

CO 1	Review, analyse, interpret and explain the main concepts of telecommunication network
CO 2	Evaluate, compare, classify and explain the operation of fundamental telecommunication switching network configurations models.
CO 3	Discuss, classify and determine the significance of basic modern signaling system.
CO 4	Analyse, interpret and discuss the concepts of OSI/ISO and explain its role in design of telephone network.
CO 5	Analyse, interpret and discuss the concepts Integrated Services Digital Networks, types of networks, charging procedures and routing mechanisms.

COURSE LEARNING OUTCOMES (CLOs):

AEC523.01	Understand basic and some advanced concepts and techniques of telecommunications networks.
AEC523.02	Discuss the simple telephone communication.
AEC523.03	Ability to analyse the characteristics of the telephone systems.
AEC523.04	Ability to analyse the processes used in telecommunication.
AEC523.05	Ability to make use of the parameters in designing telephone switches
AEC523.06	Discuss the basic settings in the operation of telecommunications systems and devices.
AEC523.07	Determine the traffic engineering and traffic load Parameters.
AEC523.08	Understand the, grade of service and blocking probability predict soccer scores.
AEC523.09	Implement the performance of a digital telephone switch.
AEC523.10	Evaluate the Time Division Multiplexing services.
AEC523.11	Explain network and transport layer functions and describe Internet routing algorithms and TCP/IP protocols
AEC523.12	Understand the concept of ISO/OSI models.
AEC523.13	Acquire the purpose of layering and describe the current layered architecture for the Internet.
AEC523.14	Analyse the LAN and metropolitan network.
AEC523.15	Apply the fiber optics into data networks.
AEC523.16	Design network synchronization and network management.
AEC523.17	Understand the cellular communication networks.
AEC523.18	Develop problem solving approaches as applied in telecommunications networking areas.
AEC523.19	Able to analyse performance of basic communication networks using both analytical and simulation techniques
AEC523.20	Apply the telecommunication network design techniques and practical implementation issues.
AEC523.21	Understand the network and protocol architecture.
AEC523.22	Determine the voice data integration.

TUTORIAL QUESTION BANK

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
	UNIT-I INTRODUCTION			
	Part - A(Short Answer Questions)			
1	Write short note on telecommunication network.	Remember	CO 1	AEC523.01
2	Describe difference between electronic switch and digital switch.	Remember	CO 1	AEC523.02
3	Define communication.	Remember	CO 1	AEC523.03
4	Explain transmission system.	Understand	CO 1	AEC523.04
5	Write short notes on signaling tones.	Remember	CO 1	AEC523.01
6	Explain the space division system with neat sketch.	Remember	CO 1	AEC523.02
7	Define Busy hour.	Remember	CO 1	AEC523.03
8	What is trunking?	Remember	CO 1	AEC523.04
9	Classify the different communication networks.	Remember	CO 1	AEC523.01
10	What is the difference between single and multistage network?	Understand	CO 1	AEC523.02
11	Explain the n stage network.	Understand	CO 1	AEC523.03
12	Write short notes multistage network.	Understand	CO 1	AEC523.04
13	What is strowger switch?	Understand	CO 1	AEC523.02
14	Briefly explain crossbar switching.	Remember	CO 1	AEC523.03
15	Define calling subscriber.	Remember	CO 1	AEC523.04
16	What are the elements of telecommunication systems?	Remember	CO 1	AEC523.02
17	What are the various switching techniques in computer Communication?	Remember	CO 1	AEC523.03
18	Explain the Short distance centralised system.	Understand	CO 1	AEC523.04
19	Explain the elements of communication switching system.	Understand	CO 1	AEC523.01
20	What is the Public Switched Telephone Network?	Remember	CO 1	AEC523.02
	Part - B (Long Answer Questions)			
1	Write about evaluation of Telecommunications.	Remember	CO 1	AEC523.01
2	How are Switching systems classified? In what way is stored Program control is superior to hard-wired control?	Understand	CO 1	AEC523.02
3	Write about basics of a Switching system.	Remember	CO 1	AEC523.03
4	Explain the operations of a single and multistage cross bar Switch.	Understand	CO 1	AEC523.04
5	Draw and explain 3X3 crossbar switching principal.	Remember	CO 1	AEC523.01
6	Write about level2 processing in Distributed Stored program Control.	Understand	CO 1	AEC523.02
7	Discuss about centralized SPC (stored program control) in electronic space division switching.	Remember	CO 1	AEC523.03
8	Explain the classification of switching systems? In what way is stored program control superior to hardwired control?	Remember	CO 1	AEC523.04
9	Compare the electronic switching with the manual switching	Understand	CO 1	AEC523.01
10	What is the need for Telecommunication Switching System?	Remember	CO 1	AEC523.02
11	Explain elements of a switching system with neat sketch.	Understand	CO 1	AEC523.03
12	Explain about the step by step switching configuration.	Remember	CO 1	AEC523.04
13	What is the significance of SPC and explain the differences Between Centralized and Distributed SPC?	Understand	CO 1	AEC523.02
14	Explain how a call setup for both local and long distance.	Remember	CO 1	AEC523.03
15	What is a call assumption? What is the theory behind lost call System?	Understand	CO 1	AEC523.04
16	Draw the typical hierarchical network structure and explain.	Understand	CO 1	AEC523.01
17	Draw and Explain the touch-tone dial telephone its applications.	Remember	CO 1	AEC523.02
18	What are the different Classification of Switching System and Draw the circuit diagram?	Understand	CO 1	AEC523.03
19	Draw the Block diagram of strowger switching system and Explain.	Remember	CO 1	AEC523.04
20	Explain the 3×4 crossbar switch and Draw the circuit diagram?	Understand	CO 1	AEC523.01

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
	Part - C (Analytical Questions)			
1	What is a three stage network and derive the expression to find number of cross point in three stage network when it has a) N incoming and N outgoing trunks b) M incoming trunks and N outgoing trunks(M>N)	Understand	CO 1	AEC523.02
2	Define and find the switching capacity and blocking probability for a two stage switching network with x-inlets and y-outlets.	Remember	CO 1	AEC523.03
3	In a 100 line folded network, how many switching elements are required for non blocking operation.	Remember	CO 1	AEC523.04
4	Draw the trunking diagram of 5005 cross has system.	Remember	CO 1	AEC523.02
5	What is the basic principle of cross bar? With necessary diagrams explain the operation.	Remember	CO 1	AEC523.04
6	With a block diagram, explain the functions of a step by step switching system.	Understand	CO 1	AEC523.01
7	Distinguish analog time division switching and digital time division switching.	Remember	CO 1	AEC523.02
8	What are the different types signalling tone in automatic exchange. Draw the waves signaling tones?	Understand	CO 1	AEC523.03
9	Draw the circuit N X N three stage switching network and explain.	Remember	CO 1	AEC523.04
10	Explain the Difference between single stage and multistage networks.	Understand	CO 1	AEC523.01

UNIT–II
TIME DIVISION SWITCHING

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
	Part – A (Short Answer Questions)			
1	Describe the evaluation of digital switching.	Remember	CO 2	AEC523.05
2	Explain the process of digitization with neat diagram.	Remember	CO 2	AEC523.06
3	List the advantages of digital transmission.	Understand	CO 2	AEC523.07
4	List the disadvantages of digital transmission.	Remember	CO 2	AEC523.08
5	What are the different modes of digital transmission?	Remember	CO 2	AEC523.09
6	Explain the Asynchronous transmission with necessary diagrams.	Remember	CO 2	AEC523.10
7	List out the disadvantage of Asynchronous transmission.	Understand	CO 2	AEC523.05
8	What is synchronous transmission?	Remember	CO 2	AEC523.06
9	Explain a three stage switching (general) with neat diagram.	Remember	CO 2	AEC523.07
10	What is probability graph?	Understand	CO 2	AEC523.08
11	Describe various blocking probability evaluation techniques	Remember	CO 2	AEC523.09
12	Explain the principle of time division switching.	Understand	CO 2	AEC523.10
13	Distinguish analog time division switching and digital time division switching.	Remember	CO 2	AEC523.05
14	Write short notes on combinational switching.	Understand	CO 2	AEC523.06
15	With neat diagrams explain time switch and space switch.	Remember	CO 2	AEC523.07
16	Explain the TS switch with neat diagram.	Understand	CO 2	AEC523.08
17	What is internal complexity?	Remember	CO 2	AEC523.09
18	What are the features of TST?	Understand	CO 2	AEC523.10
19	List the practical system which uses TST, STS and TS	Remember	CO 2	AEC523.09
20	Define time switch.	Remember	CO 2	AEC523.09
	Part - B (Long Answer Questions)			
1	Explain the Principle of operation of circuit Switching concept with example	Remember	CO 2	AEC523.05
2	Write about Enhanced Services in Space division Switching.	Understand	CO 2	AEC523.06
3	Explain the two stage Combination Switching.	Remember	CO 2	AEC523.07
4	Write the differences between Connection oriented and Connection less Services.	Understand	CO 2	AEC523.08
5	Explain the Time Multiplexed Time switching with Parallel-in/	Understand	CO 2	AEC523.09

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
	serial-out configuration.			
6	Explain about the traffic load and grade of service.	Remember	CO 2	AEC523.10
7	Write about Network Traffic load and parameters.	Remember	CO 2	AEC523.07
8	Explain basic Time division Time Switching with Random Write and Sequential read.	Remember	CO 2	AEC523.08
9	Explain clearly about grade of service and blocking probability	Understand	CO 2	AEC523.09
10	Derive expression for the blocking probability of a TSST switch if each stage is individually non-blocking.	Remember	CO 2	AEC523.10
11	What are the differences between input and output controlled Time division space switch techniques.	Remember	CO 2	AEC523.07
12	Compare Combination Switching with Electronic Space Switching and Time Division Switching?	Understand	CO 2	AEC523.08
13	Explain the combination switching and its advantages.	Understand	CO 2	AEC523.09
14	Explain Time division multiplexing.	Understand	CO 2	AEC523.10
15	Define grade of service and distinguish how GOS and blocking Probability differs.	Understand	CO 2	AEC523.05
16	Explain basic Time division space switching and draw the input & output controlled time division space switch.	Remember	CO 2	AEC523.06
17	Explain the delay systems and applications.	Remember	CO 2	AEC523.07
18	Explain the terms a) Message switching b) packet switching. c) Digit receiver access. d) Automatic call distribution. e) Call processing.	Understand	CO 2	AEC523.08
19	Explain the modeling switching system and draw the time Statistical parameters.	Understand	CO 2	AEC523.09
20	Explain the typical telephone traffic pattern on a working day.	Understand	CO 2	AEC523.10
	Part - C (Analytical Questions)			
1	An exchange is designed to handle 20000 calls during busy hour. One day the number calls during busy hour is 25000 calls. What is the resulting Grade of Service?	Remember	CO 2	AEC523.07
2	A group of 20 severs carry a traffic 10 Erlangs. If the average duration of a call 3 mintus, calculate the number of call put through by a single sever and the group as whole in a one- hour period.	Remember	CO 2	AEC523.08
3	During the busy hour, 1200 calls were offered to a group of trunks and 24 calls were lost. The average call duration is 3 minutes. Find i. Traffic offered ii. Traffic carried iii.The grade of service (Gos) and duration of period of congestion	Remember	CO 2	AEC523.09
4	Write about practical configurations of time multiplexed time switches	Remember	CO 2	AEC523.10
5	In a group of 10 severs, each is occupied for 30 minutes in an observation interval of two hours. Calculate the traffic carried by the group.	Remember	CO 2	AEC523.09
6	A group of 20 severs carry a traffic of 10 erlangs. If the average duration of a call is three minutes, calculate the number of calls put through by single server and the group as a whole in a one-hour period.	Remember	CO 2	AEC523.07
7	Draw the circuit input- controlled time division space switch and explain it.	Remember	CO 2	AEC523.08
8	Draw the circuit output- controlled time division space switch and explain it.	Remember	CO 2	AEC523.09
9	Draw the circuit diagram of basic time division time switching and its applications.	Remember	CO 2	AEC523.10
10	Explain the source multiplexing and destination de multiplexing.	Remember	CO 2	AEC523.07

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
UNIT-III **DATA NETWORKS**			
Part - A (Short Answer Questions)			
1	Explain different types data networks.	Understand	CO 3	AEC523.11
2	What is data transmission?	Remember	CO 3	AEC523.12
3	Write short notes on MODEMS.	Remember	CO 3	AEC523.13
4	Explain about the circuit switching.	Remember	CO 3	AEC523.14
5	Write short notes store data communication architecture.	Understand	CO 3	AEC523.15
6	Write short notes forward data communication architecture.	Remember	CO 3	AEC523.13
7	Explain about PSTN.	Understand	CO 3	AEC523.14
8	What are the switching techniques in data transmission?	Remember	CO 3	AEC523.15
9	What are the features of data networks?	Understand	CO 3	AEC523.14
10	Explain data transmission.	Understand	CO 3	AEC523.14
CIE-II			
1	Explain link to link layers in detail.	Remember	CO 3	AEC523.11
2	Write short notes on Physical layer.	Understand	CO 3	AEC523.12
3	Write short notes on data link layer.	Remember	CO 3	AEC523.13
4	Write short notes on Transport layer.	Remember	CO 3	AEC523.14
5	Write short notes on end to end layer.	Remember	CO 3	AEC523.15
6	Write short notes on session layer.	Remember	CO 3	AEC523.11
7	Explain OSI reference model with neat diagram.	Understand	CO 3	AEC523.12
8	Write short notes on Presentation layer.	Remember	CO 3	AEC523.13
9	Explain about the fiber optic networks.	Remember	CO 3	AEC523.14
10	Write short notes on the data standards.	Remember	CO 3	AEC523.15
Part - B (Long Answer Questions)			
1	Explain in detail the various components of data communication Networks.	Understand	CO 3	AEC523.11
2	Explain different topologies of Data Communication Networks.	Remember	CO 3	AEC523.12
3	Write about Coaxial cable Transmission system.	Remember	CO 3	AEC523.13
4	Write about data communications network architecture.	Remember	CO 3	AEC523.14
5	Explain Configurations, Topologies and Transmission modes of a Data communication circuits.	Understand	CO 3	AEC523.15
7	Explain the operation of an echo suppressor in a Transmission Plan.	Remember	CO 3	AEC523.11
8	Draw the simplified block diagram of a data communication network and explain.	Understand	CO 3	AEC523.12
9	What is network topology? Explain the different network Topologies.	Remember	CO 3	AEC523.13
10	Explain the concept of MODEM and list the advantages and Disadvantages.	Remember	CO 3	AEC523.14
CIE-II			
1	Explain the different type's layers in OSI model.	Understand	CO 3	AEC523.11
2	Describe the ISO/OSI reference model in detail.	Remember	CO 3	AEC523.12
3	Explain briefly about fiber optic networks with near sketch.	Remember	CO 3	AEC523.13
4	Explain the need for layered network architecture.	Remember	CO 3	AEC523.14
5	Describe the LAN, MAN, and WAN and list advantages and disadvantages of each network.	Understand	CO 3	AEC523.15
6	Discuss about the LAN with near sketch.	Remember	CO 3	AEC523.13
7	Discuss about the WAN with near sketch.	Remember	CO 3	AEC523.14
8	What is the need of application layer in ISO/OSI reference model?	Remember	CO 3	AEC523.15
9	Explain the Shielded twisted pair (STP) and Unshielded twisted pair (UTP).	Remember	CO 3	AEC523.15
10	Explain the coaxial cable in detail.	Remember	CO 3	AEC523.15
Part - C (Analytical Questions)			
1	Draw and explain the Public Switching Telephone Network.	Understand	CO 3	AEC523.13

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
2	Discuss about Local Area Network (LAN) and its various topologies with neat sketch.	Remember	CO 3	AEC523.14
3	Draw and explain different network topologies.	Understand	CO 3	AEC523.15
4	Explain fiber optic in detail.	Understand	CO 3	AEC523.12
5	What is the necessary for framing?	Understand	CO 3	AEC523.15
CIE-II				
1	Draw and explain ISO-OSI model in detail.	Understand	CO 3	AEC523.13
2	Explain data communication in Public Switching Telephone Network.	Remember	CO 3	AEC523.14
3	Draw and explain functional block diagram of EPABX system.	Understand	CO 3	AEC523.15
4	Explain the protocols in Data link layer	Understand	CO 3	AEC523.13
5	Explain the Point to Point Protocol in detail.	Understand	CO 3	AEC523.15
UNIT-IV TELEPHONE NETWORKS				
Part - A (Short Answer Questions)				
1	Write short notes on datagrams.	Understand	CO 4	AEC523.16
2	Write short notes on charging networks.	Understand	CO 4	AEC523.17
3	Define subscribers loop?	Remember	CO 4	AEC523.18
4	Define the terms tip and ring as connected to subscribers loop?	Remember	CO 4	AEC523.19
5	Explain different types of topology.	Remember	CO 4	AEC523.16
6	Write short notes on Mesh topology.	Remember	CO 4	AEC523.17
7	Explain briefly on numbering plan.	Remember	CO 4	AEC523.18
8	Describe the routing plans.	Remember	CO 4	AEC523.19
9	Explain in detail switching hierarchy.	Remember	CO 4	AEC523.16
10	Discuss the transmission plans.	Remember	CO 4	AEC523.17
11	Discuss the transmission systems.	Remember	CO 4	AEC523.18
12	Explain in detail numbering plans.	Understand	CO 4	AEC523.19
13	Write short notes on signalling techniques.	Understand	CO 4	AEC523.18
14	Describe the in channel signalling.	Understand	CO 4	AEC523.19
15	Discuss the common channel signaling.	Understand	CO 4	AEC523.16
16	Explain subscriber loop system	Remember	CO 4	AEC523.17
17	What is charging plan?	Remember	CO 4	AEC523.18
18	Discuss the telephone signaling techniques.	Understand	CO 4	AEC523.19
19	Explain Difference associate and non-associate siganlings	Remember	CO 4	AEC523.17
20	Explain register signaling.	Remember	CO 4	AEC523.18
Part – B (Long Answer Questions)				
1	Write about modes of operation of Common channel Signaling.	Understand	CO 4	AEC523.16
2	Briefly explain In channel signaling.	Understand	CO 4	AEC523.17
3	Explain the Subscriber loop systems.	Understand	CO 4	AEC523.18
4	Explain the operation of an echo suppressor in a Transmission Plan.	Understand	CO 4	AEC523.19
5	Explain Subscriber loop interface using Balanced circuit and Two-wire-to-four wire transformer hybrid.	Understand	CO 4	AEC523.16
6	Describe the Switching Hierarchy and Routing used in telephone networks	Remember	CO 4	AEC523.17
7	Write about the attenuation limits in Subscriber loop system.	Remember	CO 4	AEC523.18
8	Explain the operation of an echo suppressor in a Transmission Plan.	Remember	CO 4	AEC523.19
9	Describe the Subscriber loop systems with neat diagram.	Understand	CO 4	AEC523.16
10	Discuss the Numbering plan used in telephone networks.	Understand	CO 4	AEC523.17
11	Discuss the three form of signaling techniques.	Understand	CO 4	AEC523.18
12	Describe the Formats of Signaling units used in Common channel Signaling.	Understand	CO 4	AEC523.19
13	Discuss various types of switching hierarchy and routing used in Subscriber networks.	Understand	CO 4	AEC523.17
14	Write about Coaxial cable Transmission system.	Understand	CO 4	AEC523.18

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
15	Discuss the charging plan for Telecommunication Service.	Remember	CO 4	AEC523.19
16	Explain inter register signaling.	Understand	CO 4	AEC523.16
17	Explain difference between inbound and out bound signaling.	Understand	CO 4	AEC523.17
18	Discus the telephone number system structure.	Understand	CO 4	AEC523.18
19	Explain space diversity.	Understand	CO 4	AEC523.19
20	Explain frequency diversity.	Understand	CO 4	AEC523.16
Part - C (Analytical Questions)			
1	Draw the basic schematic of common channel signaling (ccs) and discuss the CCS signaling message formats.	Understand	CO 4	AEC523.18
2	Compare In-channel and Common channel signaling. Also explain Associated signaling with necessary diagram.	Remember	CO 4	AEC523.19
3	Explain different signaling techniques in telecommunication network.	Remember	CO 4	AEC523.17
4	List the considerations to be made, while designing a national telecommunication network.	Remember	CO 4	AEC52318
5	What are the ways in which call charges (tariff) are levied on customers?	Remember	CO 4	AEC523.17
6	Explain polarization diversity.	Understand	CO 4	AEC523.18
7	Explain sky wave communication.	Remember	CO 4	AEC523.19
8	Explain radio system in telephone networks.	Remember	CO 4	AEC523.17
9	Explain tendem exchange.	Understand	CO 4	AEC523.18
10	Explain right through routing.	Remember	CO 4	AEC523.19

UNIT-V
INTEGRATED SERVICES DIGITAL NETWORKS

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
Part - A (Short Answer Questions)			
1	List out the services of ISDN	Remember	CO 5	AEC523.20
2	Define ISDN.	Remember	CO 5	AEC523.21
3	List out 2 principles of ISDN.	Understand	CO 5	AEC523.22
4	Name some services provided by ISDN.	Remember	CO 5	AEC523.20
5	List out the various features of ISDN B channel.	Understand	CO 5	AEC523.21
6	List out the various features of ISDN D channel.	Understand	CO 5	AEC523.22
7	Write short notes on basic rate and primary rate access to ISDN.	Understand	CO 5	AEC523.20
8	State any two basic features of ISDN – B channels.	Understand	CO 5	AEC523.21
9	What are advantages of ISDN?	Understand	CO 5	AEC523.22
10	Write User-Network Interface Configuration for ISDN.	Understand	CO 5	AEC523.20
11	What are two types of interfaces used in ISDN?	Understand	CO 5	AEC523.21
12	Write short on MODEM.	Understand	CO 5	AEC523.22
13	Explain voice and integration.	Remember	CO 5	AEC523.20
14	Explain in detail terminal equipment.	Remember	CO 5	AEC523.21
15	Describe the data channel in detail.	Remember	CO 5	AEC523.22
16	Explain electronic mail.	Understand	CO 5	AEC523.20
17	What is digital fascimale.	Understand	CO 5	AEC523.21
18	Explain user level signaling.	Understand	CO 5	AEC523.22
19	Explain service characterization.	Remember	CO 5	AEC523.20
20	Explain ISDN standards.	Remember	CO 5	AEC523.21
Part – B (Long Answer Questions)			
1	Give a brief explanation about how to design a national telecommunication network	Remember	CO 5	AEC523.20
2	What are the advantages of ISDN draw and explain.	Understand	CO 5	AEC523.21
3	Write short technical notes on ISDN.	Remember	CO 5	AEC523.22
4	Discuss about the attributes three categories to the services.	Remember	CO 5	AEC523.20
5	Describe the architecture of ISDN.	Remember	CO 5	AEC523.21
6	Describe frame format of ISDN.	Remember	CO 5	AEC523.22
7	Write short technical notes on cellular radio network features	Remember	CO 5	AEC523.20
8	What are the ways in which call charges (Tariff) are leveled on customers?	Understand	CO 5	AEC523.21

S.No	QUESTION	Blooms taxonomy level	Course Outcomes	Course Learning Outcomes
9	Explain in detail the charging plan for telecommunication networks.	Remember	CO 5	AEC523.22
10	Briefly explain the integrated digital networks.	Remember	CO 5	AEC523.20
11	What is mean by automatic alternative routing? Explain	Understand	CO 5	AEC523.21
12	Explain ISDN interfaces and protocol architecture in detail.	Remember	CO 5	AEC523.22
13	List out the services and applications of intelligent networks.	Remember	CO 5	AEC523.20
14	Write in detail about ISDN basic rate access architecture.	Remember	CO 5	AEC523.21
15	Give a brief account on the different services supported by ISDN.	Understand	CO 5	AEC523.22
16	Explain functions of digital fascimale system.	Remember	CO 5	AEC523.20
17	Describe Telex.	Understand	CO 5	AEC523.21
18	Explain ISDN protocol architecture.	Remember	CO 5	AEC523.22
19	Explain user interface architecture.	Remember	CO 5	AEC523.20
20	Explain functional grouping.	Remember	CO 5	AEC523.21
	Part - C (Analytical Questions)			
1	What are the data link protocols used by ISDN? Explain.	Remember	CO 5	AEC523.20
2	Draw the layered architecture of OSI reference model and discuss the services provided by various layer.	Understand	CO 5	AEC523.21
3	Discuss the merits and demerits of Asynchronous protocol.	Remember	CO 5	AEC523.22
4	Discuss network architecture of ISDN.	Remember	CO 5	AEC523.20
5	Describe the conceptual view of ISDN and what is meant by the term digital pipe?	Remember	CO 5	AEC523.20
6	Explain network protocol architecture	Understand	CO 5	AEC523.21
7	What are the different queuing configurations?	Remember	CO 5	AEC523.22
8	Explain network level signaling	Remember	CO 5	AEC523.20
9	Discuss the address structure	Remember	CO 5	AEC523.20
10	Explain numbering internetworking	Understand	CO 5	AEC523.21

Prepared by:
Dr. P Ashok Babu, Professor   **HOD, ECE**