INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

ELECTRONICS AND COMMUNICATION ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Name	:	TELECOMMUNICATION SWITCHING THEORY AND APPLICATIONS
Course Code	:	AEC523
Program	:	B.Tech
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Course Faculty	:	Dr. P Ashok Babu, Professor Mr. U Somanaidu, Assistant Professor Mr. A Karthik, Assistant Professor

OBJECTIVES:

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.

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		UNIT-I				
1	What is telecommunication network?	A telecommunications network is a collection of terminal nodes in which links are connected so as to enable Telecommunication between the terminals.	Remember	CO 1	CLO 1	AEC523.01
2	Define switching system.	An electronic switching system (ESS) is a telephone switch that uses digital electronics and computerized control to interconnect telephone circuits for the purpose of establishing telephone calls.	Understand	CO 1	CLO 2	AEC523.02
3	Define crossbar switching.	A crossbar switch is an assembly of individual switches between a set of inputs and a set of outputs. The switches are arranged in a matrix	Understand	CO 1	CLO 3	AEC523.03
4	What are different of networks?	WAN - Wide Area Network. WLAN - Wireless Local Area Network. MAN - Metropolitan Area Network. SAN - Storage Area Network, System Area Network, Server Area Network	Remember	CO 1	CLO 4	AEC523.04
5	What is trunking?	Trunking is a technique used in data communications transmission systems to provide many users with access to a	Remember	CO 1	CLO 1	AEC523.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		network by sharing multiple lines or frequencies				
6	What is digital switch?	A digital switch is a device that handles Digital signals generated at or passed through a telephone company central office and forward them across the company's backbone network.	Remember	CO 1	CLO 2	AEC523.02
7	What is stored program control?	Stored program control (SPC) is a telecommunications technology used for telephone exchanges controlled by a computer program stored in the memory of the switching system.	Remember	CO 1	CLO 3	AEC523.03
8	What are the inlets and outlets of a Switching system?	The set of inputs to the switching system are called Inlets and the set of outputs are called outlets.	Remember	CO 1	CLO 4	AEC523.04
9	What is the function of switching system?	The primary function of switching system is to establish an electrical path between a given inlet and outlet pair.	Remember	CO 1	CLO 1	AEC523.01
10	Define switching matrix.	The hardware used for establishing inlet-outlet connection is called switching matrix.	Understand	CO 1	CLO 2	AEC523.02
11	What is the feature of space division switching?	In space division switching a dedicated path is established between the calling and called subscribers for the entire duration of the call.	Remember	CO 1	CLO 3	AEC523.03
12	What is Symmetric Network?	If the number of inlets is equal to number of outlets the switching network is called Symmetric network.	Remember	CO 1	CLO 4	AEC523.04
13	What is the unit of traffic in Telecommunication Network?	The traffic in Telecommunication Network is Erlang (E).	Remember	CO 1	CLO 1	AEC523.01
14	Define Direct control Switching System.	The switching system where the control subsystem may be an integral part of the switching networks such Switching system is known as Direct Control Switching System.	Understand	CO 1	CLO 2	AEC523.02
15	What is the function of operator console?	It establishes interaction with the Switching system for maintenance and administrative purpose.	Remember	CO 1	CLO 3	AEC523.03
16	Define Stored Program Control (SPC)	Carrying out the exchange control functions through programs stored in memory is called Stored Program Control.	Understand	CO 1	CLO 4	AEC523.04
17	What are the features of Stored Program Control (SPC)?	Centralized maintenance and automatic fault diagnosis, Interactive human –machine interface and high capacity to handling the interrupts.	Remember	CO 1	CLO 1	AEC523.01
18	What are the types of Stored Program Control (SPC) switching systems?	Electromechanical Switching and Electronic switching.	Remember	CO 1	CLO 2	AEC523.02

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
19	Define Grade of Service (GOS).	Grade of Service (GOS) is a measure of congestion expressed as the probability that a call will be blocked or delayed.	Understand	CO 1	CLO 3	AEC523.03
20	Define Congestion.	It is the condition in a switching center when a subscriber cannot obtain a connection to the wanted subscriber immediately.	Understand	CO 1	CLO 4	AEC523.04
21	Define Time Congestion.	It is the probability that all servers are busy. It is also called the probability of blocking.	Understand	CO 1	CLO 1	AEC523.01
22	Define Call Congestion.	It is the proportion of calls arising that do not find a free server.	Understand	CO 1	CLO 2	AEC523.02
23	Define Distributed Switching.	If the structuring of telecommunication switching is terminal to terminal connection then the switching is known as Distributed Switching.	Understand	CO 1	CLO 3	AEC523.03
24	Define telephone.	An apparatus, system, or process for transmission of sound or speech to a distant point, especially by an electric device.	Understand	CO 1	CLO 4	AEC523.04
25	What is communication?	Means of sending or receiving information, such as telephone lines or computers.	Remember	CO 1	CLO 1	AEC523.01
26	What is SIM?	A SIM card, also known as a subscriber identity module, is a smart card that stores data for GSM cellular telephone subscribers. Such data includes user identity, location and phone number,	Remember	CO 1	CLO 2	AEC523.02
27	What is LTE?	In telecommunication, Long-Term Evolution is a standard for wireless broadband communication for mobile devices and data terminals, based on the GSM/EDGE and UMTS/HSPA technologies.	Remember	CO 1	CLO 3	AEC523.03
28	What is an LTE network?	LTE is an abbreviation for Long Term Evolution. LTE is a 4G wireless communications standard developed by the 3rd Generation Partnership Project (3GPP) that's designed to provide up to 10x the speeds of 3G networks for mobile devices such as smart phones, tablets notebooks and wireless hotspots.	Remember	CO 1	CLO 4	AEC523.04
29	Define digital switching.	A digital switch is a device that handles digital signals generated at or passed through a telephone company central office and forwards them across the company's backbone network.	Understand	CO 1	CLO 1	AEC523.01
30	What is switch in telecom?	Input ports to the specific output port that will take it toward its intended In a network, a switch is a device that channels incoming data from any of multiple destination. ..	Remember	CO 1	CLO 2	AEC523.02
31	What is Telephone Exchange,	A telephone exchange is a telecommunications system used in the public switched telephone network or	Remember	CO 1	CLO 3	AEC523.03

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		in large enterprises.				
32	What is an exchange line?	Foreign exchange service (FX) is a telecommunications network service in which a telephone in a given exchange area is connected, via a private line (as opposed to a trunk line),	Remember	CO 1	CLO 4	AEC523.04
33	What is PBX switchboard?	A PBX switchboard is a telephone system that uses switches, indicators and a controlling apparatus for electric circuits to monitor telephone lines and networks.	Remember	CO 1	CLO 1	AEC523.01
34	What is PSTN phone line?	PSTN (public switched telephone network) is the world's collection of interconnected voice-oriented public telephone networks, both commercial and government-owned.	Remember	CO 1	CLO 2	AEC523.02
35	What is PSTN Telstra?	PSTN Phone Lines - (Basic Access) PSTN (the Public Switched Telephone Network) is the traditional analogue phone system, commonly used in businesses around Australia.	Remember	CO 1	CLO 3	AEC523.03
36	What is IP PBX system?	An IP PBX is a private branch exchange (telephone switching system within an enterprise) that switches calls between VoIP (voice over Internet Protocol or IP) users on local lines while allowing all users to share a certain number of external phone lines.	Remember	CO 1	CLO 4	AEC523.04
37	Define subscriber identity module.	A subscriber identity module (SIM) is a smart card inside of a GSM cellular phone that encrypts voice and data transmissions and stores data about the specific user so that the user can be identified and authenticated to the network supplying the phone service. .	Understand	CO 1	CLO 1	AEC523.01
38	Define IMEI.	IMEI (International Mobile Equipment Identity) is a 15- or 17-digit code that uniquely identifies mobile phone sets. The IMEI code can enable a GSM (Global System for Mobile communication)	Understand	CO 1	CLO 2	AEC523.02
39	What is the use of IMEI?	GSM networks use the IMEI number to identify valid devices, and can stop a stolen phone from accessing the network.	Remember	CO 1	CLO 3	AEC523.03
40	What is fully connected network	A convolution layer is much more specialized, and efficient, than a fully connected layer.	Remember	CO 1	CLO 4	AEC523.04
UNIT-II						
1	Define time division switching.	A Dictionary of Computing. time division switch An all-electronic switching system based on time division multiplexing (TDM).	Understand	CO 2	CLO 5	AEC523.05

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
2	What is TDM switching?	Time-division multiplexing (TDM) is a method of transmitting and receiving independent signals over a common signal path by means of synchronized switches at each end of the transmission line so that each signal appears on the line only a fraction of time in an alternating pattern.	Remember	CO 2	CLO 6	AEC523.06
3	Define digital switching.	A digital switch is a device that handles digital signals generated at or passed through a telephone company central office and forwards them across the company's backbone network. .	Understand	CO 2	CLO 7	AEC523.07
4	Define digital transmission.	Digital transmission is the sending of information over a physical communications media in the form of digital signals. Analogue signals must therefore be digitized first before being transmitted.	Understand	CO 2	CLO 8	AEC523.08
5	Define digital and analog transmission.	Analog transmission is a transmission method of conveying information using a continuous signal which varies in amplitude, phase, or some other property in proportion to that information. .	Understand	CO 2	CLO 9	AEC523.09
6	Define synchronous transmission.	A synchronous transmission is the Transmission of data in which each character is a self-contained unit with its own start and stop bits and an uneven interval between them.	Understand	CO 2	CLO 10	AEC523.10
7	What is synchronous transmission?	Synchronous transmission is a data Transfer method which is characterized by a continuous stream of data in the form of signals which are accompanied by regular timing signals which are generated by some external clocking mechanism meant to ensure that both the sender and receiver are synchronized with each other.	Understand	CO 2	CLO 5	AEC523.05
8	What is probability graph?	The probability plot (Chambers et al., 1983) is a graphical technique for assessing whether or not a data set follows a given distribution such as the normal or Weibull.	Understand	CO 2	CLO 6	AEC523.06
9	What is combinational switching?	Combinational Logic Circuits. ... In other words, in a Combinational Logic Circuit, the output is dependant at all times on the combination of its inputs. Thus a combinational circuit is memory less.	Understand	CO 2	CLO 7	AEC523.07
10	What is space switching?	In space division switching, a dedicated path is established between the calling and the called subscribers for the entire duration of the call. ...	Understand	CO 2	CLO 8	AEC523.08
11	Define Digital Signal	A digital signal is a discrete signal. It is depicted as discretely variable (on/off) against the analog signal	Understand	CO 2	CLO 9	AEC523.09

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		which is continuously variable.				
12	Define Digitization	The process of converting analog signal into digital signals is called digitization.	Understand	CO 2	CLO 10	AEC523.10
13	Define Sampling.	The sampled signal from analog signal should carry sufficient information so as to receive at the receiver with minimum distortion.	Understand	CO 2	CLO 5	AEC523.05
14	What is traffic engineering	Traffic engineering is a method of optimizing the performance of a telecommunications network by dynamically analyzing, predicting and regulating the behavior of data transmitted over that network.	Remember	CO 2	CLO 6	AEC523.06
15	What is GOS in telecom?	Grade of Service (GoS) In telecommunication, and in particular tele traffic engineering, grade of service is the probability of a call in a circuit group being blocked or delayed for more than a specified interval, expressed as a vulgar fraction or decimal fraction.	Remember	CO 2	CLO 7	AEC523.07
16	What is a traffic pattern in networking?	Traffic Pattern is a part of the totally collected network traffic. It represents the traffic between two networks, namely: Internal Network - usually represents the whole or part of your internal Network (company network) from which the Net Flow data are exported and collected.	Remember	CO 2	CLO 8	AEC523.08
17	What is Bhca in telecom?	BHCA is the number of telephone calls attempted at the sliding 60-minute period during which occurs the maximum total traffic load in a given 24-hour period (BHCA), and the higher the BHCA, the higher the stress on the network processors.	Remember	CO 2	CLO 9	AEC523.09
18	What is Erlang A?	The erlang is a unit of traffic density in a telecommunications system. One erlang is the equivalent of one call (including call attempts and holding time) in a specific channel for 3600 seconds in an hour.	Remember	CO 2	CLO 10	AEC523.10
19	What is Erlang B?	Erlang B is a modelling formula that is widely used in call center scheduling. The formula can be used to calculate any one of the following three factors if you know or predict the other two: Busy Hour Traffic (BHT): the number of hours of call traffic during the busiest hour of operation.	Remember	CO 2	CLO 5	AEC523.05
20	What is Erlang used for?	Erlang is a general-purpose programming language and runtime environment. Erlang has built-in support for concurrency, distribution and fault tolerance. Erlang is used in several large telecommunication systems from Ericsson.	Remember	CO 2	CLO 6	AEC523.06

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
21	What is busy hour traffic?	Busy hour refers to the total number of customer calls during the peak or busy hour.	Remember	CO 2	CLO 7	AEC523.07
22	What is lost call system?	The service of incoming calls depends on the number of lines. ... The type of system by which a blocked call is simply refused and is lost is called loss system.	Remember	CO 2	CLO 8	AEC523.08
23	What is blocking?	Blocking in telecommunication systems is when a circuit group is fully occupied and unable to accept further calls	Remember	CO 2	CLO 9	AEC523.09
24	What is a digital switching system?	A digital switch is a device that handles digital signals generated at or passed through a telephone company central office and forwards them across the company's backbone network. ...	Remember	CO 2	CLO 10	AEC523.10
25	Define lost call cleared.	Lost Calls Cleared (LCC)—These blocked calls are cleared from the system ,meaning that when a caller is blocked, the call goes somewhere else (mainly to other traffic-sensitive facilities).	Understand	CO 2	CLO 5	AEC523.05
26	Define call return.	Call return allows a customer to dial a code that identifies the last incoming call. On some types of central office equipment, it announces the number and offers the call-back option; on others,	Understand	CO 2	CLO 6	AEC523.06
27	Define Call again.	Call again, a form of automatic ring back, allows a caller, on reaching a busy signal, to hang up, dial a special code, and be called back automatically when the called number is no longer busy, usually with a limit of 30 minutes.	Understand	CO 2	CLO 7	AEC523.07
28	Define Lost calls held.	The service of incoming calls depends on the number of lines. ... So, if the incoming call finds all available lines busy, the call is said to be blocked.	Understand	CO 2	CLO 8	AEC523.08
29	Define Missed call.	A missed call is a telephone call that is deliberately terminated by the caller before being answered by its intended recipient, in order to communicate a pre-agreed message.	Understand	CO 2	CLO 9	AEC523.09
30	Define Dropped call.	The dropped-call rate (DCR) is the fraction of the telephone calls which, due to technical reasons, were cut off before the speaking parties had finished their conversational tone and before one of them had hung up (dropped calls).	Understand	CO 2	CLO 10	AEC523.10
31	What is TRAI	Telecom Regulatory Authority of India (TRAI) is an independent regulatory body established by the Telecom Regulatory Authority of India Act 1997 to oversee the telecommunications industry in India.	Remember	CO 2	CLO 5	AEC523.05

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
32	What is mean by cold call?	Cold-calling is a technique in which a salesperson contacts individuals who have not previously expressed interest in the offered products or services.	Remember	CO 2	CLO 6	AEC523.06
33	What is delay system?	Delays A system can be built with an inherent delay. Delays are units that cause a time-shift in the input signal, but that don't affect the signal characteristics.	Remember	CO 2	CLO 7	AEC523.07
34	What is the blocking probability?	The grade of service is the blocking probability. A higher grade of service implies high probability of loss during the busy hour.	Remember	CO 2	CLO 8	AEC523.08
35	What is combined space and time switching?	In space division switching, a dedicated path is established between the calling and the called subscribers for the entire duration of the call. .	Remember	CO 2	CLO 9	AEC523.09
36	What is a static transfer switch?	STS – Static Transfer Switch are automatic static switching equipments designed to transfer electric loads between two independent AC power sources without interruption.	Remember	CO 2	CLO 10	AEC523.10
37	What is TST switching?	Based on a reasoning similar to the one used for TST switch, a STS switch is non-blocking if k=2N-1.	Remember	CO 2	CLO 5	AEC523.05
38	What is crossbar switching system?	At each cross point is a switch; when closed, it connects one of the inputs to one of the outputs. A given crossbar is a single layer, non-blocking switch.	Remember	CO 2	CLO 6	AEC523.06
39	What is multistage switch?	Multistage switches provide better blocking performance than single stage switches, as they provide alternative paths for a particular source-destination pair.	Remember	CO 2	CLO 7	AEC523.07
40	What is single stage network?	In a single stage interconnect network, the input nodes are connected to output via a single stage of switches.	Remember	CO 2	CLO 8	AEC523.08
		UNIT-III				
1	Define data networks.	A computer network or data network is a telecommunications network which allows computers to exchange data.	Understand	CO 3	CLO 11	AEC523.11
2	What is called a network?	Internet is called network of networks because it connects computers all over the world forming a network. And all computers are also connected to each other	Remember	CO 3	CLO 12	AEC523.12
3	What is network description?	A network is defined as a group of two or more computer systems linked together. There are many types of computer networks,	Remember	CO 3	CLO 13	AEC523.13
4	Define EPABX systems.	EPABX (Electronic Private Automatic Branch Exchange) : A private branch exchange (PBX) is a telephone exchange that serves a particular business or office,	Understand	CO 3	CLO 14	AEC523.14
5	What is a key system?	Key systems are traditionally used by companies with fewer than 50 employees. A key system has	Remember	CO 3	CLO 15	AEC523.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		telephones with multiple buttons ("keys") and lights that indicate which lines are in use.				
6	What is PABX access code?	Page Code: An access code of a PABX that allows users to access the paging equipment to voice page.	Remember	CO 3	CLO 11	AEC523.11
7	What is the use of Epabx system?	EPABX – Electronic Private Automatic Branch Exchange is nothing but a switching system. It is an equipment of immense use for telephonic connectivity with extensions of single/multi phone lines.	Remember	CO 3	CLO 12	AEC523.12
8	Define telephone systems	A business phone system can range from just a few telephones in a small business up to a complex private branch exchange (PBX) system utilized by large businesses.	Understand	CO 3	CLO 13	AEC523.13
9	What is PABX code?	A private automatic branch exchange (PABX) is an automatic telephone switching system within a private enterprise. ... Since almost all private branch exchanges today are automatic,	Remember	CO 3	CLO 14	AEC523.14
10	Define multi-line phone system	A 2-line phone system, also called a multi-line phone system, is a separate phone line that can be used for business functions such as faxing, remote voicemail, an Internet connection, or to provide a second extension for your business.	Understand	CO 3	CLO 15	AEC523.15
11	Define circuit switching	Circuit switching is a method of implementing a telecommunications network in which two network nodes establish a dedicated communications channel (circuit) through the network before the nodes may communicate. ..	Understand	CO 3	CLO 11	AEC523.11
12	Define packet switching	Packet switching is a method of grouping data that is transmitted over a digital network into packets. Packets are made of a header and a payload.	Understand	CO 3	CLO 12	AEC523.12
13	define ISO-OSI reference model.	The Open Systems Interconnection model is a conceptual model that characterizes and standardizes the communication functions of a telecommunication or computing system without regard to its underlying internal structure and technology.	Understand	CO 3	CLO 13	AEC523.13
14	What is link to link layer?	In computer networking, the link layer is the lowest layer in the Internet Protocol Suite, the networking architecture of the Internet.	Remember	CO 3	CLO 14	AEC523.14
15	What is link layer in networking?	The data link layer is the protocol layer in a program that handles the moving of data into and out of a physical link in a network.	Remember	CO 3	CLO 15	AEC523.15
16	What is data link layer?	The data layer, or layer 2, is the second layer of the seven-layer OSI model of computer networking. This layer is the	Remember	CO 3	CLO 11	AEC523.11

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		protocol layer that transfers data between adjacent network nodes in a wide area network or between nodes on the same local area network segment.				
17	What is physical layer?	In the seven-layer OSI model of computer networking, the physical layer or layer 1 is the first and lowest layer. This layer may be implemented by a PHY chip.	Remember	CO 3	CLO 12	AEC523.12
18	What is application layer?	An application layer is an abstraction layer that specifies the shared communications protocols and interface methods used by hosts in a communications network. The application layer abstraction is used in both of the standard models of computer networking: the Internet Protocol Suite and the OSI model.	Remember	CO 3	CLO 13	AEC523.13
19	what is session layer?	In the seven-layer OSI model of computer networking, the session layer is layer 5. The session layer provides the mechanism for opening, closing and managing a session between end-user application processes,	Remember	CO 3	CLO 14	AEC523.14
20	Define transport layer.	In computer networking, the transport layer is a conceptual division of methods in the layered architecture of protocols in the network stack in the Internet protocol suite and the OSI model.	Understand	CO 3	CLO 15	AEC523.15
21	Define network layer.	The network layer is the third level of the Open Systems Interconnection Model (OSI Model) and the layer that provides data routing paths for network communication.	Understand	CO 3	CLO 11	AEC523.11
22	Define end to end layers.	The transport layer is the layer in the open system interconnection (OSI) model responsible for end-to-end communication over a network. ... The transport layer is also responsible for the management of error correction,	Understand	CO 3	CLO 12	AEC523.12
23	Define Satellite based data networks.	In other words, it is a telecommunications network provided by orbital communication stations. Signals from these satellites allow a user with a dish to have a high speed internet connection.	Understand	CO 3	CLO 13	AEC523.13
24	Define LAN.	A local-area network (LAN) is a computer network that spans a relatively small area. Most often, a LAN is confined to a single room, building or group of buildings, however,	Understand	CO 3	CLO 14	AEC523.14
25	Define WAN.	A wide area network is a telecommunications network that extends over a large geographical area for the primary purpose of computer	Understand	CO 3	CLO 15	AEC523.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		networking. Wide area networks are often established with leased telecommunication circuits.				
26	What is metropolitan area network	A metropolitan area network is a computer network that interconnects users with computer resources in a geographic region of the size of a metropolitan area.	Remember	CO 3	CLO 11	AEC523.11
27	What Is Man Network example?	A MAN (metropolitan area network) is a larger network that usually spans several buildings in the same city or town. The IUB network is an example of a MAN	Remember	CO 3	CLO 12	AEC523.12
28	Define Computer network	A computer network is a set of computers connected together for the purpose of sharing resources. The most common resource shared today is connection to the Internet.	Understand	CO 3	CLO 13	AEC523.13
29	What is fiber optic network?	Fiber-optic communication is a method of transmitting information from one place to another by sending pulses of light through an optical fiber. The light forms an electromagnetic carrier wave that is modulated to carry information.	Remember	CO 3	CLO 14	AEC523.14
30	Define fiber optic network cable.	A fiber optic cable is a network cable that contains strands of glass fibers inside an insulated casing. They're designed for long distance, high-performance data net working, and telecommunications.	Understand	CO 3	CLO 15	AEC523.15
31	What is a Fiber optic Ethernet connection?	Ethernet Cable. Ethernet is a popular method of networking computers in a local area networks (LANs) using copper cabling. In the past, Ethernet had a reputation for being slower than fiber optic cable,	Remember	CO 3	CLO 11	AEC523.11
32	Define Optics	Optics is the branch of physics that studies the behavior and properties of light, including its interactions with matter and the construction of instruments that use or detect it.	Understand	CO 3	CLO 12	AEC523.12
33	Define data network standards.	Networking Standards. Networking standards ensure the interoperability of networking technologies by defining the rules of communication among networked devices.	Understand	CO 3	CLO 13	AEC523.13
34	What is network standard?	Networking Standards. Networking standards ensure the interoperability of networking technologies by defining the rules of communication among networked devices.	Remember	CO 3	CLO 14	AEC523.14
35	What is Ethernet?	Ethernet is a family of computer networking technologies commonly used in local area networks, metropolitan area networks and wide area networks.	Remember	CO 3	CLO 15	AEC523.15
36	Define wi-fi	A facility allowing computers, smart phones, or other devices to connect to	Understand	CO 3	CLO 11	AEC523.11

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		the Internet or communicate with one another wirelessly within a particular area.				
37	What is a DAC in Hi Fi?	(Digital-to-Analog Converter)That "magic" is in large part thanks to a digital-to-analog converter or DAC.	Remember	CO 3	CLO 12	AEC523.12
38	Define presentation layer protocol	The presentation layer is layer 6 of the 7-layer Open Systems Interconnection (OSI) model. It is used to present data to the application layer (layer 7) in an accurate, well-defined and standardized format.	Understand	CO 3	CLO 13	AEC523.13
39	What is feature of networking?	Network operating systems support a number of security features that control access to the network. These include authorization and permission for access to the network, with specific control of features such as user management, log-on controls and passwords.	Remember	CO 3	CLO 14	AEC523.14
40	Define modem in data communication.	A modem is a device or program that enables a computer to transmit data over, for example, telephone or cable lines.	Understand	CO 3	CLO 15	AEC523.15
UNIT-IV						
1	Define cabling.	The laying of lines to the subscriber premises from the exchange office is called Cabling.	Remember	CO 4	CLO 16	AEC523.16
2	What is mean by trunk groups?	The group of trunk lines that are used to interconnect different exchanges are called the Trunk Groups.	Remember	CO 4	CLO 17	AEC523.17
3	Define mesh topology.	Mesh topology, as the name implies, is a fully connected network. The number of trunk groups in a mesh network is proportional to the square of the exchanges being interconnected.	Understand	CO 4	CLO 18	AEC523.18
4	Define star topology.	Star topology is connected in the shape of a star, which utilizes an intermediate exchange called a tandem exchange through which all other exchanges communicate.	Understand	CO 4	CLO 19	AEC523.19
5	What is the need of hierarchical topology?	The hierarchical topology is used to handle heavy traffic with minimal number of trunk groups.	Remember	CO 4	CLO 16	AEC523.16
6	What is Echo?	This results in reflecting a part of the incoming signal onto the outgoing circuit, which returns to the speaker as Echo	Remember	CO 4	CLO 17	AEC523.17
7	Define Satellite Exchanges.	The Main Exchange and the smaller exchanges serving different localities are called the Satellite Exchanges.	Understand	CO 4	CLO 18	AEC523.18
8	Define Main Exchange.	A large central exchange which serves the main business center of a town can be called the Main Exchange.	Understand	CO 4	CLO 19	AEC523.19
9	Define Multi-exchange area	The area containing the complete network of the main exchange and the	Understand	CO 4	CLO 16	AEC523.16

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		satellite is known as the Multi-exchange area.				
10	Define open numbering plan.	This is also called the Non-Uniform Numbering Plan and it permits wide variation in the number of digits to be used to identify a subscriber within a multi-exchange area or within a country.	Understand	CO 4	CLO 17	AEC523.17
11	Define semi numbering plan.	This plan permits number lengths to differ by almost one or two digits. The semi-open numbering plan is commonly used in countries such as India, Sweden, Switzerland and UK.	Understand	CO 4	CLO 18	AEC523.18
12	Define Closed Numbering Plan.	This is also called the Uniform Numbering Plan where the numbers of digits in a Subscriber numbers are fixed. This is used in a few countries such as France, Belgium, Canada, Hawaii and in a few parts of USA	Understand	CO 4	CLO 19	AEC523.19
13	What is mean by Area code?	.This code identifies a particular numbering area or the multi-exchange area of the called subscriber. It is with this code, the routing for a trunk call is determined and charged for it.	Remember	CO 4	CLO 16	AEC523.16
14	What is mean by Exchange code?	This code identifies a particular exchange within a numbering area. It determines the routing for incoming trunk call from another numbering area or for a call originating from one exchange and destined to another in the same numbering area.	Remember	CO 4	CLO 17	AEC523.17
15	Define Subscriber Line Number.	It is used to select the called subscriber line at the terminating exchange. The combination of the exchange code and the subscriber line number is called the Subscriber Line number in CCITT terminology.	Understand	CO 4	CLO 18	AEC523.18
16	Define multi metering.	Depending upon the number of exchanges involved in setting up a call, more than one pulse is sent to the charging meter, which is called Multi Metering.	Understand	CO 4	CLO 19	AEC523.19
17	Define Line signaling.	The network-wide signaling that involves end-to-end signaling between the Originating exchange and the terminating exchange is called the Line signaling.	Understand	CO 4	CLO 16	AEC523.16
18	What is mean by In channel signaling?	In-Channel Signaling is also known as Per Trunk Signaling. This uses the same channel, which carries user voice or data to pass control signals related to that call or connection.	Remember	CO 4	CLO 17	AEC523.17
19	What is mean by Common Channel Signaling?	Common Channel Signaling uses a separate common channel for passing control signals for a group of trunks or information paths. This signaling does not use the speech or the data path for signaling.	Remember	CO 4	CLO 18	AEC523.18

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
20	Define In-channel Signaling.	This type of signaling is used to carry voice or data and pass control signals related to a call or connection.	Understand	CO 4	CLO 19	AEC523.19
21	Define In-channel Signaling.	This type of signaling is used to carry voice or data and pass control signals related to a call or connection.	Understand	CO 4	CLO 16	AEC523.16
22	Define In-band Signaling.	In-band voice frequency uses the same frequency band as the voice, which is 300-3400 Hz, which has to be protected against false operation by speech.	Understand	CO 4	CLO 17	AEC523.17
23	Define out band signaling.	The out-band signaling uses frequencies which are above the voice band but below the upper limit of 4000 Hz of the nominal voice channel spacing.	Understand	CO 4	CLO 18	AEC523.18
24	Define FDMA.	The total bandwidth is divided into non-overlapping frequency sub bands.	Understand	CO 4	CLO 19	AEC523.19
25	Define TDMA	Divides the radio spectrum into time slots and in each slot only one user is allowed to either transmit or receive.	Understand	CO 4	CLO 16	AEC523.16
26	Define Dialing	A combination of 350 Hz and 440 Hz sine waves sent to the Telephone from the central office (CO) indicating that the network is ready to receive calling instructions.	Understand	CO 4	CLO 17	AEC523.17
27	What are the dialing modes?	Dialing Modes: Pulse and Touch Tone or Dual-Tone-Multi Frequency.	Remember	CO 4	CLO 18	AEC523.18
28	What is mean by National telephone services?	An international public telecommunication number (for geographic areas) is also referred to as the national significant number (NSN).	Remember	CO 4	CLO 19	AEC523.19
29	What is mean by Global telephone services?	An international public telecommunication number for global telephone service consists of a three digit country code and global subscriber number.	Remember	CO 4	CLO 16	AEC523.16
30	What is mean by International networks?	An international public telecommunication number for international networks consists of three digit country code.	Remember	CO 4	CLO 17	AEC523.17
31	Define CDMA.	Many users share the same frequency same time with different coding.	Understand	CO 4	CLO 18	AEC523.18
32	Define Switching hierarchy	The interconnectivity of calls between different areas having different exchanges is done with the help of trunk lines between the exchanges.	Understand	CO 4	CLO 19	AEC523.19
33	Define rotary dialing.	A rotary dial is a component of a telephone or a telephone switchboard that implements a signaling technology in telecommunications known as pulse dialing.	Understand	CO 4	CLO 16	AEC523.16
34	What is mean by push button dialing	The push-button telephone is a telephone that has buttons or keys for dialing a telephone number, in contrast to having a rotary dial as in earlier telephone instruments	Remember	CO 4	CLO 17	AEC523.17

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
35	Define Inter office signaling.	Interoffice signaling also has undergone a notable evolution, changing over from simple "in-band" methods to fully digitized "out-of-band" methods.	Understand	CO 4	CLO 18	AEC523.18
36	What is the need of coaxial cable?	Coaxial cable is used as a transmission line for radio frequency signals. Its applications include feed lines connecting radio transmitters and receivers to their antennas, computer network (Internet) connections.	Remember	CO 4	CLO 19	AEC523.19
37	What is the function of microwave link?	A microwave link is a communications system that uses a beam of radio waves in the microwave frequency range to transmit information between two fixed locations on the earth.	Remember	CO 4	CLO 16	AEC523.16
38	What is the need of optical fiber cable?	A fiber optic cable is a network cable that contains strands of glass fibers inside an insulated casing.	Remember	CO 4	CLO 17	AEC523.17
39	Define cellular mobile telephony	Cellular telephone, sometimes called mobile telephone, is a type of short-wave analog or digital telecommunication in which a subscriber has a wireless connection from a mobile phone to a relatively nearby transmitter	Understand	CO 4	CLO 18	AEC523.18
40	Define frequency reuse.	Frequency reuse is the process of using the same radio frequencies on radio transmitter sites within a geographic area that are separated by sufficient distance to cause minimal interference with each other.	Understand	CO 4	CLO 19	AEC523.19
		UNIT-V				
1	Define MODEM.	A modem (portmanteau of modulator-demodulator) is a hardware device that converts data into a format suitable for a transmission medium so that it can be transmitted from computer to computer	Understand	CO 5	CLO 20	AEC523.20
2	What is mean by Basic Rate Access?	The Basic Rate Interface or Basic Rate Access, simply called the ISDN BRI Connection uses the existing telephone infrastructure.	Remember	CO 5	CLO 21	AEC523.21
3	What is mean by Primary Rate Interface?	The Primary Rate Interface or Primary Rate Access simply called the ISDN PRI connection is used by enterprises and offices.	Remember	CO 5	CLO 22	AEC523. 22
4	Define Narrowband ISDN.	The Narrowband Integrated Services Digital Network is called the N-ISDN.	Understand	CO 5	CLO 20	AEC523.20
5	Define Broadband ISDN	The Broadband Integrated Services Digital Network is called the B-ISDN.	Understand	CO 5	CLO 21	AEC523.21
6	Define Broadband Communications.	As the speed is greater than 1.544 Mbps, the communications based on this are called Broadband Communications	Understand	CO 5	CLO 22	AEC523. 22
7	What is the Principle of ISDN	The ISDN works based on the standards defined by ITU-T (formerly CCITT). The Telecommunication	Remember	CO 5	CLO 20	AEC523.20

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		Standardization Sector (ITU-T) coordinates standards for telecommunications on behalf of the International Telecommunication Union (ITU) and is based in Geneva, Switzerland.				
8	What is the idea behind ISDN?	The Integrated Services of Digital Networking, in short ISDN is a telephone network based infrastructure that allows the transmission of voice and data simultaneously at a high speed with greater efficiency.	Remember	CO 5	CLO 21	AEC523.21
9	What are the different ISDN services?	Integrated Services Digital Network (ISDN) is a set of communication standards for simultaneous digital transmission of voice, video, data, and other network services over the traditional circuits of the public switched telephone network.	Remember	CO 5	CLO 22	AEC523. 22
10	DefineData Encoding	Basic rate is 192kbps using the pseudo ternary encoding scheme; in which binary 1 is represented by an absence of voltage and 0 is represented by a positive or negative pulse of 750 mV with 10% tolerance.	Understand	CO 5	CLO 20	AEC523.20
11	Define Circuit switched	The user places a call and a current switched connection is established with another network user.	Understand	CO 5	CLO 21	AEC523.21
12	Define Packet switched.	The user is connected to a packet switching mode and data are exchanged with other users via X.25.	Understand	CO 5	CLO 22	AEC523. 22
13	Define Frame mode.	The user is connected to a frame relay mode and data are exchanged with other users via LAPF.	Understand	CO 5	CLO 20	AEC523.20
14	Define Semi-permanent.	This is a connection to another user set up by prior arrangement and not requiring a call establishment protocol.	Understand	CO 5	CLO 21	AEC523.21
15	Define Data gram.	A datagram is a basic transfer unit associated with a packet-switched network.Data grams provide a connectionless communication service across a packet-switched network	Understand	CO 5	CLO 22	AEC523. 22
16	Define virtual circuit	A virtual circuit (VC) is a means of transporting data over a packet switched computer network in such a way that it appears as though there is a dedicated physical layer link between the source and destination end systems of this data.	Understand	CO 5	CLO 20	AEC523.20
17	Define Control signaling.	A pulse or frequency of electricity or light that represents a control command as it travels over a network, a computer channel or wireless.	Understand	CO 5	CLO 21	AEC523.21
18	Define packet switching.	Packet switching is a digital network transmission process in which data is broken into suitably-sized pieces or blocks for fast and efficient transfer via different network devices.	Understand	CO 5	CLO 22	AEC523. 22

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
19	Define telemetry	Telemetry is an automated communications process by which measurements and other data are collected at remote or inaccessible points and transmitted to receiving equipment for monitoring.	Understand	CO 5	CLO 20	AEC523.20
20	Define circuit switching	Circuit switching is a method of implementing a telecommunications network in which two network nodes establish a dedicated communications channel (circuit) through the network before the nodes may communicate.	Understand	CO 5	CLO 21	AEC523.21
21	Define routing.	Routing is a process which is performed by layer 3 (or network layer) devices in order to deliver the packet by choosing an optimal path from one network to another.	Understand	CO 5	CLO 22	AEC523. 22
22	Define Static routing.	Static routing is a process in which we have to manually add routes in routing table.	Understand	CO 5	CLO 20	AEC523.20
23	Define Default Routing	This is the method where the router is configured to send all packets towards a single router (next hop). It doesn't matter to which network the packet belongs,	Understand	CO 5	CLO 21	AEC523.21
24	Define Dynamic Routing	Dynamic routing makes automatic adjustment of the routes according to the current state of the route in the routing table.	Understand	CO 5	CLO 22	AEC523. 22
25	Define Frame relay	Frame relay is a packet-switching telecommunication service designed for cost-efficient data transmission for intermittent traffic between local area networks (LANs) and between endpoints in wide area networks (WANs).	Understand	CO 5	CLO 20	AEC523.20
26	Define User-Network Interface.	A user–network interface (UNI) is a demarcation point between the responsibility of the service provider and the responsibility of the subscriber.	Understand	CO 5	CLO 21	AEC523.21
27	Define Network-Network Interface.	A network interface is the point of interconnection between a computer and a private or public network. A network interface is generally a network inter face card (NIC),	Understand	CO 5	CLO 22	AEC523. 22
28	What is mean by committed information rate	Committed information rate (CIR) is the bandwidth for a virtual circuit guaranteed by an internet service provider to work under normal conditions.	Remember	CO 5	CLO 20	AEC523.20
29	What is mean by Committed Burst Size?	Specifies the maximum number of bits allowed for incoming Service Frames to be EIR-conformant; for every connection, an EBS is defined.	Remember	CO 5	CLO 21	AEC523.21
30	Define Constant Bit Rate.	Constant bit rate (CBR) is a term used in telecommunications, relating to the quality of service. Compare with variable bit rate.	Understand	CO 5	CLO 22	AEC523. 22

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
31	Define Variable Bit Rate.	Variable bit rate (VBR) is a term used in telecommunications and computing that relates to the bit rate used in sound or video encoding.	Understand	CO 5	CLO 20	AEC523.20
32	Define Available Bit Rate.	Available bit rate (ABR) is a service used in ATM networks when source and destination don't need to be synchronized.	Understand	CO 5	CLO 21	AEC523.21
33	Define Un specified Bit Rate.	An ATM bandwidth-allocation service that does not guarantee any through put levels and uses only available bandwidth. UBR is often used when transmitting data that can tolerate delays.	Understand	CO 5	CLO 22	AEC523. 22
34	Define bearer services	In telecommunications, Bearer Service or data service is a service that allows transmission of information sig nals between network interfaces.	Understand	CO 5	CLO 20	AEC523.20
35	What is meant by data channel?	An information route and associated circuitry that is used for the passing of data between systems or parts of systems.	Remember	CO 5	CLO 21	AEC523.21
36	Define terminal equipment	In telecommunication, the term terminal equipment has the following meanings: Communications equipment at either end of a communications link,	Understand	CO 5	CLO 22	AEC523. 22
37	Define internet working	Internetworking is a term used by Cisco. Any interconnection among or between public, private, commercial, industrial, or governmental computer networks may also be defined as an internetwork or "Internetworking".	Understand	CO 5	CLO 20	AEC523.20
38	Define Extranet	An extranet is a network of internetwork or Internetworking that is limited in scope to a single organization or entity but which also has limited connections to the networks of one or more other usually,	Understand	CO 5	CLO 21	AEC523.21
39	Define Intranet.	An intranet is a set of interconnected networks or Internetworking, using the Internet Protocol and uses IP-based tools such as web browsers and ftp tools,	Understand	CO 5	CLO 22	AEC523. 22
40	Define voice data Integration.	Voice and Data Integration (Networking)Voice-data integration entails the transmission of multiple .Voice and data channels over a single digital transport with the objective of eliminating separate networks and	Understand	CO 5	CLO 20	AEC523.20

Signature of the Faculty   **Signature of HOD**