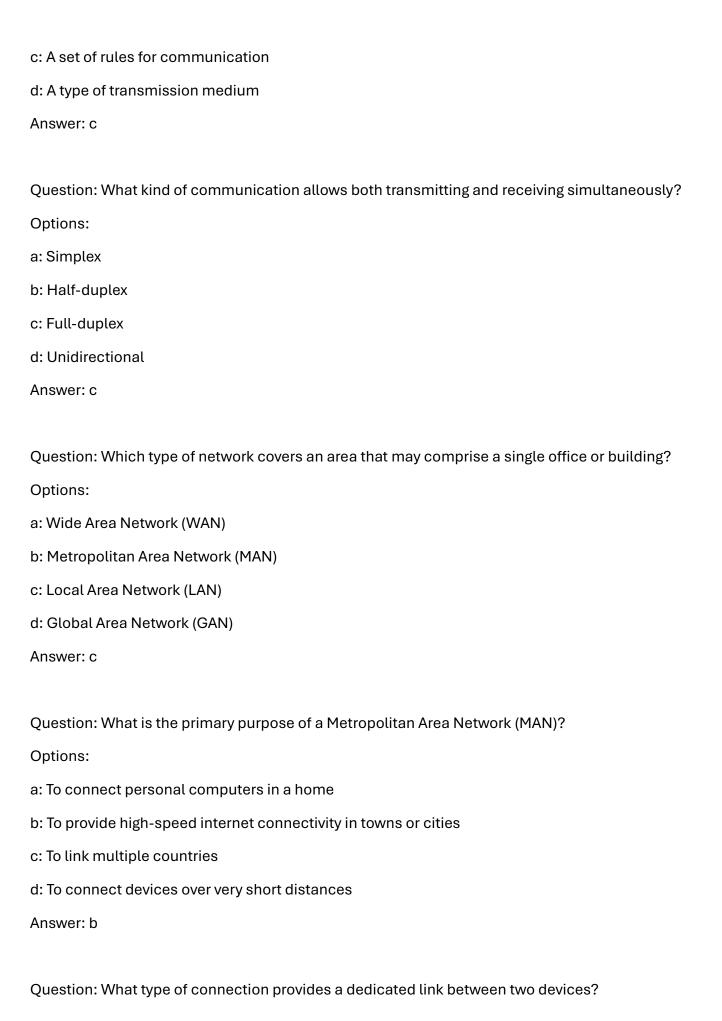CN UNIT 1

Question: Which characteristic ensures data reaches the correct destination?

Options:

a: Accuracy

b: Timeliness

c: Delivery

d: Jitter

Answer: c

Question: Which of the following refers to the variation in packet arrival time?

Options:

a: Delivery

b: Timeliness

c: Jitter

d: Accuracy

Answer: c

Question: Which of the following is an example of a Simplex system?

Options:

a: Keyboard

b: Telephone network

c: Walkie-talkie

d: Monitor

Answer: a

Question: What does a protocol represent in data communications?

Options:

a: A network device

b: An encryption method

c: A set of rules for communication

d: A type of transmission medium

Answer: c

Question: What kind of communication allows both transmitting and receiving simultaneously?

Options:

a: Simplex

b: Half-duplex

c: Full-duplex

d: Unidirectional

Answer: c

Question: Which type of network covers an area that may comprise a single office or building?

Options:

a: Wide Area Network (WAN)

b: Metropolitan Area Network (MAN)

c: Local Area Network (LAN)

d: Global Area Network (GAN)

Answer: c

Question: What is the primary purpose of a Metropolitan Area Network (MAN)?

Options:

a: To connect personal computers in a home

b: To provide high-speed internet connectivity in towns or cities

c: To link multiple countries

d: To connect devices over very short distances

Answer: b

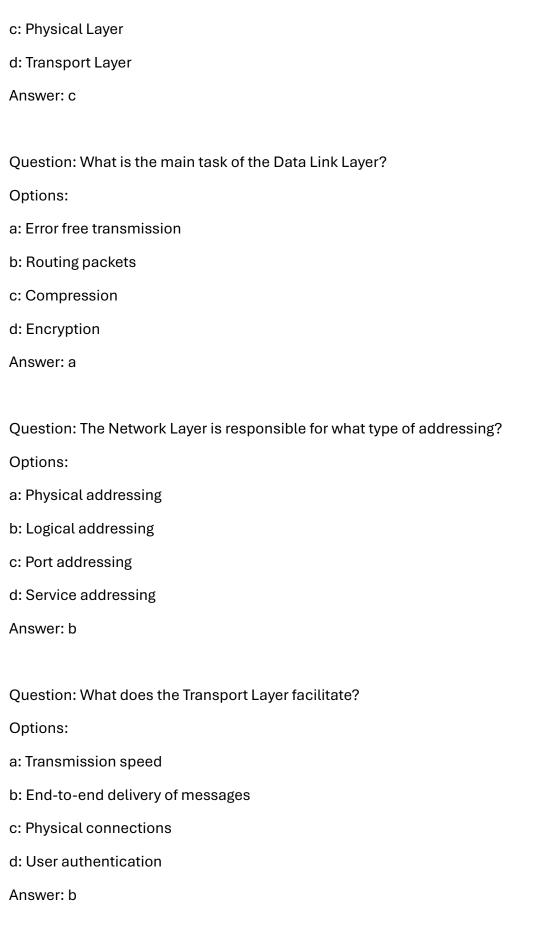Question: What type of connection provides a dedicated link between two devices?

Options:

a: Multipoint Connection

b: Point-to-Point Connection

c: Grid Connection

d: Broadcast Connection

Answer: b

Question: In a multipoint connection, how is the channel capacity shared?

Options:

a: Only by one device at a time

b: Equally among all devices

c: Spatially or temporally among the devices

d: Never shared

Answer: c

Question: What type of topology connects every device with a dedicated point-to-point link to every other device?

Options:

a: Star Topology

b: Bus Topology

c: Mesh Topology

d: Ring Topology

Answer: c

Question: What is the main disadvantage of a bus topology?

Options:

a: High installation cost

b: If the backbone cable fails, the entire system fails

c: Difficult fault isolation

d: Requires more hardware

Answer: b

Question: In mesh topology, what does the term 'dedicated' mean?

Options:

a: Shared connection

b: Connection to multiple devices

c: Link carries traffic only between two devices

d: No cabling required

Answer: c

Question: What type of connections do devices have in a star topology?

Options:

a: Direct connections to each other

b: Dedicated point-to-point link to a central hub

c: Single connection to the main cable

d: Connections through a repeater

Answer: b

Question: Which topology is known for its high cost due to numerous connections?

Options:

a: Star Topology

b: Bus Topology

c: Mesh Topology

d: Ring Topology

Answer: c

Question: What is a protocol?

Options:

a: A type of hardware

b: A set of rules for data communications

c: A kind of software

d: A network topology

Answer: b

Question: What does the term 'syntax' refer to in a protocol?

Options:

a: The meaning of each data section

b: The structure or format of the data

c: The speed of data transmission

d: The reliability of the communication

Answer: b

Question: What does 'semantics' refer to in the context of data communication protocols?

Options:

a: The speed of data transfer

b: The meaning of data patterns

c: The structure of messages

d: The security of communications

Answer: b

Question: What are de facto standards?

Options:

a: Legally established standards

b: Standards established through widespread use

c: Highly experimental standards

d: Standards that are outdated

Answer: b

Question: Which of the following describes 'timing' in protocols?

Options:

a: The format of the data structure

b: When and how fast data should be sent

c: The distance traveled by the data

d: The encryption of data being sent

Answer: b

Question: What are de jure standards?

Options:

a: Standards that are widely accepted

b: Legislated standards by recognized bodies

c: Standards for proprietary technology

d: Old and obsolete standards

Answer: b

Question: How many layers are there in the OSI model?

Options:

a: 5

b: 6

c: 7

d: 8

Answer: c

Question: Which layer is responsible for transmitting raw bits over a communication channel?

Options:

a: Data Link Layer

b: Network Layer

c: Physical Layer

d: Transport Layer

Answer: c

Question: What is the main task of the Data Link Layer?

Options:

a: Error free transmission

b: Routing packets

c: Compression

d: Encryption

Answer: a

Question: The Network Layer is responsible for what type of addressing?

Options:

a: Physical addressing

b: Logical addressing

c: Port addressing

d: Service addressing

Answer: b

Question: What does the Transport Layer facilitate?

Options:

a: Transmission speed

b: End-to-end delivery of messages

c: Physical connections

d: User authentication

Answer: b

Question: Which layer is responsible for dialog control?

Options:

a: Transport Layer

b: Session Layer

c: Application Layer

d: Presentation Layer

Answer: b

Question: What is the purpose of the Presentation Layer?

Options:

a: Data compression

b: Data transmission rate

c: Syntax and semantics of information

d: Physical addressing

Answer: c

Question: Which protocol is responsible for addressing on a local area network (LAN)?

Options:

a: IP

b: TCP

c: ARP

d: UDP

Answer: c

Question: What type of protocol is UDP?

Options:

a: Connection-oriented

b: Reliable

c: Connectionless

d: Best-effort delivery

Answer: c

Question: What does ICMP stand for?

Options:

a: Internet Control Management Protocol

b: Internet Control Message Protocol

c: Internet Communication Message Protocol

d: Internet Connectivity Message Protocol

Answer: b

Question: Which protocol is a connection-oriented transport layer protocol?

Options:

a: UDP

b: HTTP

c: TCP

d: IGMP

Answer: c

Question: Which layer of the OSI model is equivalent to the Internet Layer in TCP/IP?

Options:

a: Transport layer

b: Application layer

c: Network layer

d: Physical layer

Answer: c

Question: What does HTTP stand for?

Options:

a: Hyperlink Transfer Protocol

b: Hyper Text Transfer Protocol

c: High Transfer Text Protocol

d: HyperText Transfer Protocol

Answer: b

Question: Which type of transmission is characterized by sending one bit at a time?

Options:

a: Parallel Transmission

b: Serial Transmission

c: Synchronous Transmission

d: Isochronous Transmission

Answer: b

Question: What is the purpose of start and stop bits in Asynchronous transmission?

Options:

a: To increase speed

b: To alert the receiver about incoming data

c: To compress data

d: To encrypt data

Answer: b

Question: In which transmission is timing not important?

Options:

a: Synchronous Transmission

b: Isochronous Transmission

c: Asynchronous Transmission
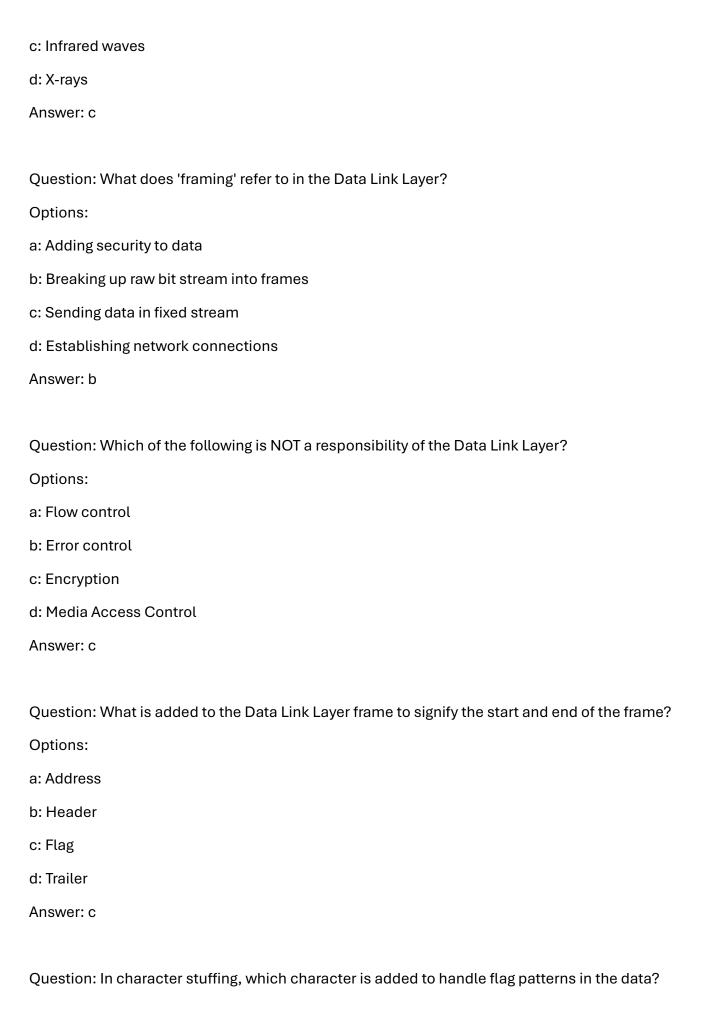
d: Parallel Transmission

Answer: c

Question: Which connection is an example of Asynchronous transmission?

Options:

a: Computer to computer data transfer

b: Connection of keyboard to computer

c: Streaming video

d: Broadcasting TV signals

Answer: b

Question: What is a key advantage of Synchronous transmission over Asynchronous transmission?

Options:

a: More data integrity

b: Faster transmission

c: Less complexity

d: Lower cost

Answer: b

Question: What type of multiplexing does Time-Division Multiplexing represent?

Options:

a: Analog

b: Digital

c: Optical

d: Wireless

Answer: b

Question: What does a Demultiplexer do?

Options:

a: Combines signals

b: Separates signals

c: Modulates frequencies

d: Encodes messages

Answer: b

Question: What condition must be met for Frequency Division Multiplexing to work?

Options:

a: Bandwidth of link >= Combined bandwidth of signals

b: Link must be digital

c: Signals must be at the same frequency

d: Only one carrier frequency can be used

Answer: a

Question: What does TDM allow several connections to share?

Options:

a: Low bandwidth

b: High bandwidth

c: Analog signals

d: Carrier frequencies

Answer: b

Question: What is the primary material used in fiber-optic cables?

Options:

a: Copper

b: Aluminum

c: Glass or plastic

d: Steel

Answer: c

Question: Coaxial cable is known for carrying signals in which frequency range?

Options:

a: Low frequency

b: Higher frequency

c: Very low frequency

d: Infrared frequency

Answer: b

Question: What is the common connector type for Unshielded Twisted Pair (UTP) cables?

Options:

a: SC Connector

b: ST Connector

c: RJ45

d: BNC Connector

Answer: c

Question: Fiber-optic cables transmit signals in the form of what?

Options:

a: Electric current

b: Radio waves

c: Light

d: Microwaves

Answer: c

Question: What is the frequency range for radio waves?

Options:

a: 3 kHz to 1 GHz

b: 1 GHz to 300 GHz

c: 300 GHz to 400 THz

d: 400 THz to 900 THz

Answer: a

Question: What is a characteristic of microwaves?

Options:

a: Omni-directional

b: Unidirectional

c: Can penetrate walls

d: Low frequency

Answer: b

Question: What is the frequency range of microwaves?

Options:

a: 3 kHz - 1 GHz

b: 1 GHz - 300 GHz

c: 300 GHz - 400 THz

d: 400 THz - 900 THz

Answer: b

Question: Which of the following is a disadvantage of radio waves?

Options:

a: Cannot penetrate walls

b: High data rate

c: Low data rate for digital communication

d: Requires aligned antennas

Answer: c

Question: What type of waves are used for short-range communication?

Options:

a: Radio waves

b: Microwaves

c: Infrared waves

d: X-rays

Answer: c

Question: What does 'framing' refer to in the Data Link Layer?

Options:

a: Adding security to data

b: Breaking up raw bit stream into frames

c: Sending data in fixed stream

d: Establishing network connections

Answer: b

Question: Which of the following is NOT a responsibility of the Data Link Layer?

Options:

a: Flow control

b: Error control

c: Encryption

d: Media Access Control

Answer: c

Question: What is added to the Data Link Layer frame to signify the start and end of the frame?

Options:

a: Address

b: Header

c: Flag

d: Trailer

Answer: c

Question: In character stuffing, which character is added to handle flag patterns in the data?

Options:

a: Start character

b: Stop character

c: Escape character

d: Control character

Answer: c

Question: What happens in bit stuffing when a 0 is followed by five consecutive 1-bits appears in data?

Options:

a: A 1 is added

b: No action is taken

c: An extra 0 is added

d: The frame is terminated

Answer: c

Question: What is the primary pattern used as a delimiter in bit-oriented protocols?

Options:

a: 01111000

b: 01111100

c: 01111110

d: 11111110

Answer: c

Question: What is the purpose of adding a checksum to the data?

Options:

a: To reduce the size of the data

b: To detect any errors during transmission

c: To encrypt the data

d: To speed up transmission

Answer: b

Question: What does the receiver do if the checksum result is zero?

Options:

a: Discards the data

b: Accepts the data

c: Requests a resend

d: Alters the data

Answer: b

Question: What happens if the checksum at the receiver's end does not equal zero?

Options:

a: The data is accepted

b: The data is discarded

c: The sender is notified

d: The receiver keeps the data anyway

Answer: b

Question: What is the checksum calculated from?

Options:

a: The original data and a random number

b: Segment addition's result using one's complement

c: Only the last segment of data

d: The total number of segments

Answer: b

Question: What does CRC stand for?

Options:

a: Cyclic Redundancy Check

b: Correct Redundancy Code

c: Cyclic Reference Check

d: Checksum Redundant Code

Answer: a

Question: What happens if there is a remainder after division at the receiver side in CRC?

Options:

a: The data is accepted

b: The data is corrupted(error)

c: The data is stored

d: The data is forwarded

Answer: b

Question: How many bits are appended to the data word in CRC?

Options:

a: k

b: n

c: n minus k

d: n plus k

Answer: c

Question: What type of division is used in CRC?

Options:

a: Decimal division

b: Binary division

c: Modulo-10 division

d: Modulo-2 division

Answer: d

Question: If k=4 bits and n=7 bits, what is the size of the appended data word?

Options:

a: 4 bits

b: 3 bits

c: 7 bits

d: 10 bits

Answer: b

Question: What must be agreed upon by both sender and receiver in CRC?

Options:

a: The data packet size

b: The method of division

c: The divisor

d: The redundancy level

Answer: c

Question: What is the primary purpose of Hamming code?

Options:

a: To compress data

b: To detect and correct errors during data transmission

c: To encrypt data

d: To increase data transfer speed

Answer: b

Question: How many redundant bits are needed for 7 data bits according to the Hamming code?

Options:

a: 2

b: 3

c: 4

d: 5

Answer: c

Question: In even parity, what value is assigned to the parity bit if the number of 1s is odd?

Options:

a: 0

b: 1

c: 2

d: It remains unchanged

Answer: b

Question: Where are redundancy bits placed in Hamming code?

Options:

a: At even positions only

b: At odd positions only

c: At positions that are powers of 2

d: At random positions

Answer: c

Question: What binary number indicates that there is an error in the 6th bit?

Options:

a: 0000

b: 0110

c: 1111

d: 1010

Answer: b

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CN unit 2

Question: What is the primary purpose of flow control?

Options:

a: To speed up data transmission.

b: To restrict the amount of data the sender can send before waiting for acknowledgment.

c: To guarantee error-free transmission.

d: To send data in the reverse direction.

Answer: b

Question: What type of channel is referred to as a Noiseless Channel?

Options:

a: A channel where frames are lost, duplicated, or corrupted.

b: An ideal channel in which no frames are lost, duplicated, or corrupted.

c: A channel that only works in one direction.

d: A channel that uses continuous error correction.

Answer: b

Question: In the Stop and Wait Protocol, what does the sender do after sending a frame?

Options:

a: Continues to send more frames simultaneously.

b: Stops until it receives an acknowledgment from the receiver.

c: Immediately sends an acknowledgment back.

d: Resends the frame without waiting.

Answer: b

Question: What happens if the ACK frame is lost in the Stop and Wait Protocol?

Options:

a: The sender sends the next frame automatically.

b: The sender is not aware and waits indefinitely.

c: The sender keeps sending frames until it receives the ACK.

d: The sender resends the frame because it gets confused.

Answer: b

Question: What is one of the actions performed when a timeout occurs in the Stop-and-Wait ARQ?

Options:

a: The sender increases the transmission speed.

b: The sender resends the frame.

c: The receiver sends a new frame.

d: The sender changes the sequence number.

Answer: b

Question: What does the acknowledgment number in the Stop-and-Wait ARQ indicate?

Options:

a: Which frame was corrupted.

b: The next frame expected by the receiver.

c: The sequence number of the last transmitted frame.

d: The total number of frames sent.

Answer: b

Question: What is the purpose of the Go-Back-N ARQ protocol?

Options:

a: To send only one frame at a time

b: To allow multiple frames to be sent before receiving acknowledgments

c: To ensure all frames are processed out of order

d: To eliminate the need for sequence numbers

Answer: b

Question: What happens when a frame is received out of order in Go-Back-N ARQ?

Options:

a: It is accepted and processed

b: It is buffered until the missing frame arrives

c: It is immediately acknowledged

d: It is discarded and the sender is notified

Answer: d

Question: In which protocol are cumulative acknowledgments used?

Options:

a: Stop-and-Wait ARQ

b: Go-Back-N ARQ

c: Selective Repeat ARQ

d: No ARQ protocols use cumulative acknowledgments

Answer: b

Question: What happens when the timer for a frame expires in Go-Back-N ARQ?

Options:

a: Only the expired frame is resent

b: The sender stops sending frame

c: The sender waits for a new acknowledgment

d: All outstanding frames are resent starting from the expired timer

Answer: d

Question: How does Selective Repeat ARQ avoid unnecessary retransmissions?

Options:

a: By sending NAKs for every frame received out of order

b: By discarding all frames until the next in order frame is received

c: By allowing the receiver to buffer out-of-order frames

d: By sending cumulative ACKs to the sender only

Answer: c

Question: What layer is responsible for resolving access to the shared media?

Options:

a: Data Link Control

b: Multiple Access Resolution

c: Network Layer

d: Physical Layer

Answer: b

Question: What happens when a collision occurs in Pure ALOHA?

Options:

a: Frames are always successfully received

b: Frames are either destroyed or modified

c: Frames queue for later transmission

d: Frames are acknowledged immediately

Answer: b

Question: In Pure ALOHA, what is the purpose of the Back-Off Time (TB)?

Options:

a: To retransmit frames immediately

b: To help avoid more collisions

c: To send an acknowledgement

d: To increase transmission speed

Answer: b

Question: What is the maximum throughput of Pure ALOHA?

Options:

a: 0.368

b: 0.184

c: 0.5

d: 1.0

Answer: b

Question: What is the vulnerable time for Pure ALOHA?

Options:

a: Tfr

b: Tfr/2

c: 2 x Tfr

d: Tfr + Tfr

Answer: c

Question: In Slotted ALOHA, when can a station send frames?

Options:

a: At the beginning of a time slot

b: Any time

c: At random intervals

d: Upon receiving an ACK

Answer: a

Question: What is the maximum throughput of Slotted ALOHA?

Options:

a: 0.184

b: 0.368

c: 0.5

d: 1.0

Answer: b

Question: What does CSMA stand for?

Options:

a: Carrier Sense Multiple Access

b: Carrier signal Multiple Access

c: Carrier Synchronization Multiple Access

d: Carrier Sensing Multiple Access

Answer: b

Question: In 1-Persistent CSMA mode, what does a station do if the channel is busy?

Options:

a: Transmits data immediately

b: Waits and keeps sensing the channel

c: Waits for a random time

d: Aborts the transmission

Answer: b

Question: What happens if a collision is detected in CSMA/CD?

Options:

a: Transmission continues without any interruption

b: The data is sent again without delay

c: The station sends a jam signal and waits

d: The station resets its connection

Answer: c

Question: What is meant by P-Persistent CSMA?

Options:

a: A station sends data with a probability P

b: A station sends data non-stop

c: A station never waits to send data

d: A station sends data only when the channel is free

Answer: a

Question: What is the maximum size of the data field in an Ethernet frame?

Options:

a: 1200 bytes

b: 1800 bytes

c: 1600 bytes

d: 1500 bytes

Answer: d

Question: Which IEEE standard is typically associated with Ethernet?

Options:

a: 802.1

b: 802.3

c: 802.5

d: 802.11

Answer: b

Question: What is the purpose of the CRC field in an Ethernet frame?

Options:

a: Error Detection

b: Addressing

c: Data Formatting

d: Synchronization

Answer: a

Question: What is the first field of the Ethernet frame?

Options:

a: Destination Address

b: Source Address

c: Preamble

d: Data

Answer: c