

1. The data link layer takes the packets from \_\_\_\_\_ and encapsulates them into frames for transmission.

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

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Answer: a

Explanation: In computer networks, the data from application layer is sent to transport layer and is converted to segments. These segments are then transferred to the network layer and these are called packets. These packets are then sent to data link layer where they are encapsulated into frames. These frames are then transferred to physical layer where the frames are converted to bits. Error control and flow control data is inserted in the frames at the data link layer.

2. Which of the following tasks is not done by data link layer?

- a) framing
- b) error control
- c) flow control
- d) channel coding

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Answer: d

Explanation: Channel coding is the function of physical layer. Data link layer mainly deals with framing, error control and flow control. Data link layer is the layer where the packets are encapsulated into frames.

3. Which sublayer of the data link layer performs data link functions that depend upon the type of medium?

- a) logical link control sublayer
- b) media access control sublayer
- c) network interface control sublayer
- d) error control sublayer

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Answer: b

Explanation: Media access control (MAC) deals with transmission of data packets to and from the network-interface card, and also to and from another remotely shared channel. The MAC sublayer also prevents collision using protocols like CSMA/CD.

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4. Header of a frame generally contains \_\_\_\_\_

- a) synchronization bytes
- b) addresses
- c) frame identifier
- d) all of the mentioned

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Answer: d

Explanation: In a frame, the header is a part of the data that contains all the

required information about the transmission of the file. It contains information like synchronization bytes, addresses, frame identifier etc. It also contains error control information for reducing the errors in the transmitted frames.

5. Automatic repeat request error management mechanism is provided by \_\_\_\_\_

- a) logical link control sublayer
- b) media access control sublayer
- c) network interface control sublayer
- d) application access control sublayer

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Answer: a

Explanation: The logical link control is a sublayer of data link layer whose main function is to manage traffic, flow and error control. The automatic repeat request error management mechanism is provided by the LLC when an error is found in the received frame at the receiver's end to inform the sender to re-send the frame.

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6. When 2 or more bits in a data unit has been changed during the transmission, the error is called \_\_\_\_\_

- a) random error
- b) burst error
- c) inverted error
- d) double error

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Answer: b

Explanation: When a single bit error occurs in a data, it is called single bit error. When more than a single bit of data is corrupted or has error, it is called burst error. If a single bit error occurs, the bit can be simply repaired by inverting it, but in case of a burst error, the sender has to send the frame again.

7. CRC stands for \_\_\_\_\_

- a) cyclic redundancy check
- b) code repeat check
- c) code redundancy check
- d) cyclic repeat check

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Answer: a

Explanation: Cyclic redundancy check is a code that is added to a data which helps us to identify any error that occurred during the transmission of the data. CRC is only able to detect errors, not correct them. CRC is inserted in the frame trailer.

8. Which of the following is a data link protocol?

- a) ethernet
- b) point to point protocol
- c) hdlc
- d) all of the mentioned

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Answer: d

Explanation: There are many data link layer protocols. Some of them are SDLC (synchronous data link protocol), HDLC (High level data link control), SLIP (serial line interface protocol), PPP (Point to point protocol) etc. These protocols are used to provide the logical link control function of the Data Link Layer.

9. Which of the following is the multiple access protocol for channel access control?

- a) CSMA/CD
- b) CSMA/CA
- c) Both CSMA/CD & CSMA/CA
- d) HDLC

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Answer: c

Explanation: In CSMA/CD, it deals with detection of collision after collision has occurred, whereas CSMA/CA deals with preventing collision. CSMA/CD is abbreviation for Carrier Sensing Multiple Access/Collision detection. CSMA/CA is abbreviation for Carrier Sensing Multiple Access/Collision Avoidance. These protocols are used for efficient multiple channel access.

10. The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called

- a) piggybacking
- b) cyclic redundancy check
- c) fletcher's checksum
- d) parity check

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Answer: a

Explanation: Piggybacking is a technique in which the acknowledgment is temporarily delayed so as to be hooked with the next outgoing data frame. It saves a lot of channel bandwidth as in non-piggybacking system, some bandwidth is reserved for acknowledgement.

## **Error Correction and Detection**

**1. In layering, n layers provide service to**

- a) n layer**
- b) n-1 layer**
- c) n+1 layer**
- d) none of the mentioned**

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Answer: c

Explanation: In layering n layer provides service to n+1 layer and use the service provided by n-1 layer.

2. Which can be used as an intermediate device in between transmitter entity and receiver entity?

- a) IP router
- b) Microwave router
- c) Telephone switch
- d) All of the mentioned

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Answer: d

Explanation: IP router, microwave router and telephone switch can be used as an intermediate device between communication of two entities.

3. Which has comparatively high frequency component?

- a) Sine wave
- b) Cosine wave
- c) Square wave
- d) None of the mentioned

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Answer: c

Explanation: Square wave has comparatively high frequency component in them.

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4. Which has continuous transmission?

- a) Asynchronous
- b) Synchronous
- c) Asynchronous & Synchronous
- d) None of the mentioned

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Answer: b

Explanation: Synchronous has continuous transmission where as asynchronous have sporadic transmission.

5. Which requires bit transitions?

- a) Asynchronous
- b) Synchronous
- c) Asynchronous & Synchronous
- d) None of the mentioned

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Answer: b

Explanation: Synchronous transmission needs bit transition.

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6. In synchronous transmission, receiver must stay synchronous for

- a) 4 bits
- b) 8 bits
- c) 9 bits
- d) 16 bits

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Answer: c

Explanation: In synchronous transmission, receiver must stay synchronous for 9 bits.

7. How error detection and correction is done?

- a) By passing it through equalizer
- b) By passing it through filter
- c) By amplifying it
- d) By adding redundancy bits

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Answer: d

Explanation: Error can be detected and corrected by adding additional information that is by adding redundancy bits.

8. Which is more efficient?

- a) Parity check
- b) Cyclic redundancy check
- c) Parity & Cyclic redundancy check
- d) None of the mentioned

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Answer: b

Explanation: Cyclic redundancy check is more efficient than parity check.

9. Which can detect two bit errors?

- a) Parity check
- b) Cyclic redundancy check
- c) Parity & Cyclic redundancy check
- d) None of the mentioned

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Answer: b

Explanation: CRC is more powerful and it can detect various kind of errors like 2 bit errors.

10. CRC uses

- a) Multiplication
- b) Binary division
- c) Multiplication & Binary division
- d) None of the mentioned

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Answer: c

Explanation: CRC uses more math like multiplication and binary division.

## On Stop and Wait Protocol, Go Back N protocol

In the \_\_\_\_\_ Protocol, if no acknowledgment for a frame has arrived, we resend all outstanding frames.

- |           |                      |
|-----------|----------------------|
| <b>a.</b> | Stop-and-Wait ARQ    |
| <b>b.</b> | Go-Back-N ARQ        |
| <b>c.</b> | Selective-Repeat ARQ |
| <b>d.</b> | none of the above    |

**Answer:** (b).Go-Back-N ARQ

**82.** In the \_\_\_\_\_ protocol we avoid unnecessary transmission by sending only frames that are corrupted.

- a. Stop-and-Wait ARQ
- b. Go-Back-N ARQ
- c. Selective-Repeat ARQ
- d. none of the above

**Answer:** (c).Selective-Repeat ARQ

**83.** Both Go-Back-N and Selective-Repeat Protocols use a \_\_\_\_\_.

- a. sliding frame
- b. sliding window
- c. sliding packet
- d. none of the above

**Answer:** (b).sliding window

**84.** In Go-Back-N ARQ, if 5 is the number of bits for the sequence number, then the maximum size of the send window must be \_\_\_\_\_.

- a. 15
- b. 16
- c. 31
- d. 1

**Answer:** (c).31

**85.** In Go-Back-N ARQ, if 5 is the number of bits for the sequence number, then the maximum size of the receive window must be \_\_\_\_\_.

- a. 15
- b. 16
- c. 31
- d. 1

**Answer:** (d).1

**86.** In Selective Repeat ARQ, if 5 is the number of bits for the sequence number, then the maximum size of the send window must be \_\_\_\_.

- a. 15
- b. 16
- c. 31
- d. 1

**Answer:** (b).16

**87.** In Selective Repeat ARQ, if 5 is the number of bits for the sequence number, then the maximum size of the receive window must be \_\_\_\_.

- a. 15
- b. 16
- c. 31
- d. 1

**Answer:** (b).16

**88.** High-level Data Link Control (HDLC) is a \_\_\_\_\_ protocol for communication over point-to-point and multipoint links.

- a. bit-oriented
- b. byte-oriented
- c. character-oriented
- d. none of the above

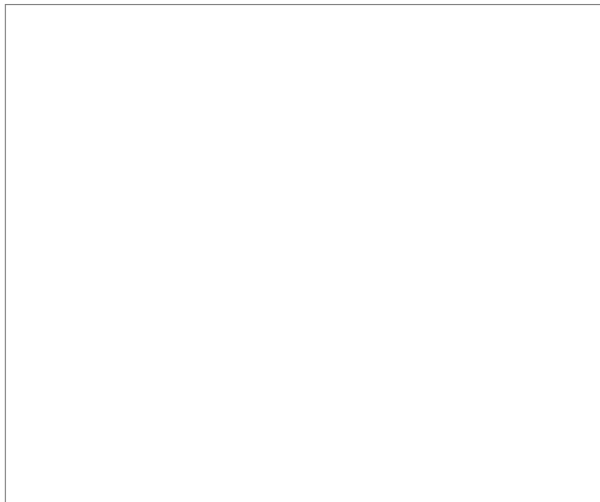
**Answer:** (a).bit-oriented



**89.** The most common protocol for point-to-point access is the Point-to-Point Protocol (PPP), which is a \_\_\_\_\_ protocol.

- a.** bit-oriented
- b.** byte-oriented
- c.** character-oriented
- d.** none of the above

**Answer:** (b).byte-oriented



**90.** \_\_\_\_\_ control refers to a set of procedures used to restrict the amount of data that the sender can send before waiting for acknowledgment.

- a.** Flow
- b.** Error
- c.** Transmission
- d.** none of the above

**Answer:** (a).Flow