

Unit-II

1. The Data Link Layer is the _____ layer of the OSI model.

- A) First
- B) Second
- C) Third
- D) Fourth

Answer: B) Second

2. The primary function of the Data Link Layer is:

- A) Routing
- B) Framing and Error Control
- C) Session Management
- D) Encryption

Answer: B) Framing and Error Control

3. Which service is provided by the Data Link Layer?

- A) Flow Control
- B) Error Control
- C) Framing
- D) All of the above

Answer: D) All of the above

4. An error that changes a single bit is called:

- A) Burst Error
- B) Random Error
- C) Single-bit Error
- D) Frame Error

Answer: C) Single-bit Error

5. A burst error affects:

- A) One bit only
- B) Multiple consecutive bits
- C) No bits
- D) Alternate bits

Answer: B) Multiple consecutive bits

6. Adding extra bits for error detection is called:

- A) Multiplexing
- B) Framing
- C) Redundancy
- D) Routing

Answer: C) Redundancy

7. Which technique can only detect errors but not correct them?

- A) CRC
- B) Hamming Code
- C) Reed-Solomon Code
- D) FEC

Answer: A) CRC

8. FEC stands for:

- A) Forward Error Correction
- B) Frame Error Check
- C) Fast Error Control
- D) Frame Error Correction

Answer: A) Forward Error Correction

9. In retransmission-based error control, erroneous frames are:

- A) Ignored
- B) Corrected automatically
- C) Sent again
- D) Stored permanently

Answer: C) Sent again

10. The simplest error detection technique is:

- A) CRC
- B) Checksum
- C) Parity Check
- D) Hamming Code

Answer: C) Parity Check

11. Even parity means the total number of 1s is:

- A) Odd
- B) Even
- C) Zero
- D) Unlimited

Answer: B) Even

12. Which error detection technique is widely used in networks?

- A) CRC
- B) Parity
- C) Checksum
- D) VRC

Answer: A) CRC

13. CRC stands for:

- A) Cyclic Redundancy Check
 - B) Cyclic Routing Code
 - C) Central Redundancy Check
 - D) Cyclic Repeat Check
- Answer:** A) Cyclic Redundancy Check

14. Framing refers to:

- A) Dividing data into frames
 - B) Error correction
 - C) Routing packets
 - D) Encryption
- Answer:** A) Dividing data into frames

15. Flow control prevents:

- A) Congestion only
 - B) Receiver overflow
 - C) Routing errors
 - D) Addressing errors
- Answer:** B) Receiver overflow

16. Which protocol is used for reliable data transfer over noisy channels?

- A) ARQ
 - B) FTP
 - C) SMTP
 - D) DNS
- Answer:** A) ARQ

17. A noiseless channel is assumed to have:

- A) Errors
 - B) No errors
 - C) Routing issues
 - D) Delays only
- Answer:** B) No errors

18. HDLC stands for:

- A) High-level Data Link Control
 - B) High Data Link Communication
 - C) Hybrid Data Link Control
 - D) High-level Digital Link Control
- Answer:** A) High-level Data Link Control

19. HDLC is a:

- A) Character-oriented protocol
 - B) Bit-oriented protocol
 - C) Packet-oriented protocol
 - D) Circuit-oriented protocol
- Answer:** B) Bit-oriented protocol

20. Which is a random access protocol?

- A) TDMA
 - B) FDMA
 - C) ALOHA
 - D) CDMA
- Answer:** C) ALOHA

21. Pure ALOHA has a maximum throughput of:

- A) 18.4%
 - B) 36.8%
 - C) 50%
 - D) 100%
- Answer:** A) 18.4%

22. Slotted ALOHA has a maximum throughput of:

- A) 18.4%
 - B) 25%
 - C) 36.8%
 - D) 50%
- Answer:** C) 36.8%

23. Which is a controlled access protocol?

- A) ALOHA
 - B) CSMA
 - C) Polling
 - D) Pure ALOHA
- Answer:** C) Polling

24. FDMA, TDMA, and CDMA belong to:

- A) Random Access
 - B) Controlled Access
 - C) Channelization
 - D) Routing
- Answer:** C) Channelization

25. IEEE 802.11 is the standard for:

- A) Ethernet
 - B) Bluetooth
 - C) WiFi
 - D) Fiber Optics
- Answer:** C) WiFi

26. The MAC protocol used in IEEE 802.11 is:

- A) CSMA/CD
 - B) CSMA/CA
 - C) Token Passing
 - D) Polling
- Answer:** B) CSMA/CA

27. CSMA/CA stands for:

- A) Carrier Sense Multiple Access with Collision Avoidance
 - B) Carrier Signal Multiple Access with Collision Avoidance
 - C) Carrier Sense Multiplexing Access
 - D) Central Sense Multiple Access
- Answer:** A) Carrier Sense Multiple Access with Collision Avoidance

28. The Frame Control field is present in:

- A) IP Frame
 - B) HDLC Frame
 - C) IEEE 802.11 Frame
 - D) TCP Segment
- Answer:** C) IEEE 802.11 Frame

29. Which field identifies the sender and receiver in an IEEE 802.11 frame?

- A) Sequence Field
 - B) Address Field
 - C) FCS Field
 - D) Duration Field
- Answer:** B) Address Field

30. The FCS field is used for:

- A) Addressing
 - B) Routing
 - C) Error Detection
 - D) Flow Control
- Answer:** C) Error Detection

Fill in the Blanks

1. The Data Link Layer is the _____ layer in the OSI model.
Answer: Second
2. The process of dividing data into units is called _____.
Answer: Framing
3. Extra bits added for error detection are called _____.
Answer: Redundancy
4. Errors affecting multiple consecutive bits are called _____ errors.
Answer: Burst
5. A single parity bit is used in _____ checking.
Answer: Parity
6. CRC stands for Cyclic Redundancy _____.
Answer: Check
7. Checksum is a technique for error _____.
Answer: Detection
8. FEC stands for Forward Error _____.
Answer: Correction
9. In retransmission-based systems, damaged frames are _____.
Answer: Retransmitted
10. Flow control prevents receiver _____.
Answer: Overflow
11. Error control ensures reliable _____ transmission.
Answer: Data
12. HDLC is a _____-oriented protocol.
Answer: Bit
13. HDLC stands for High-level Data Link _____.
Answer: Control
14. ALOHA is a _____ access protocol.
Answer: Random
15. Pure ALOHA allows transmission at _____ time.
Answer: Any
16. Slotted ALOHA requires synchronization into time _____.
Answer: Slots
17. Polling is a _____ access method.
Answer: Controlled
18. FDMA stands for Frequency Division Multiple _____.
Answer: Access
19. TDMA stands for Time Division Multiple _____.
Answer: Access
20. CDMA stands for Code Division Multiple _____.
Answer: Access
21. IEEE 802.11 is the standard for _____ LANs.
Answer: Wireless

22. The MAC protocol used in WiFi is _____.
Answer: CSMA/CA
23. CSMA stands for Carrier Sense Multiple _____.
Answer: Access
24. CA in CSMA/CA stands for Collision _____.
Answer: Avoidance
25. The FCS field is used for error _____.
Answer: Detection
26. IEEE 802.11 frames contain address and _____ fields.
Answer: Control
27. A noiseless channel assumes _____ transmission errors.
Answer: No
28. The sender and receiver are identified using _____ fields.
Answer: Address
29. Channelization techniques divide a channel among multiple _____.
Answer: Users
30. Data Link Layer protocols provide flow control and error _____.
Answer: Control
31. The maximum throughput of Pure ALOHA is _____%.
Answer: 18.4
32. The maximum throughput of Slotted ALOHA is _____%.
Answer: 36.8
33. CRC uses polynomial _____ for error detection.
Answer: Division
34. Error correction techniques can both detect and _____ errors.
Answer: Correct
35. IEEE standards are developed by the _____ organization.
Answer: IEEE