1. What type of error detection technique involves adding a parity bit to each character to ensure even or odd parity?

a) Vertical Redundancy Check (VRC)
b) Longitudinal Redundancy Check (LRC)
c) Cyclic Redundancy Check (CRC)
d) Check sum

Answer: a) Vertical Redundancy Check (VRC)
Explanation: VRC adds a parity bit to each character, making the total number of ones either even or odd, thereby detecting errors in transmission.

2. Which error detection method involves adding a checksum to a block of data, which is then transmitted along with the data?

a) Vertical Redundancy Check (VRC)
b) Cyclic Redundancy Check (CRC)
c) Longitudinal Redundancy Check (LRC)
d) Check sum

Answer: d) Check sum
Explanation: Check sum computes the sum of all the words in a block of data and transmits it along with the data. At the receiver’s end, the sum is recalculated, and if it doesn’t match, an error is detected.

3. What type of error detection method involves adding an extra character at the end of a block of characters to make the total number of ones even or odd?

a) Longitudinal Redundancy Check (LRC)
b) Check sum
c) Cyclic Redundancy Check (CRC)
d) Vertical Redundancy Check (VRC)

Answer: a) Longitudinal Redundancy Check (LRC)
Explanation: LRC adds an extra character at the end of the block of characters to ensure either even or odd parity in the entire block, thereby detecting errors.

4. Which error detection technique uses polynomial codes to generate a checksum, which is appended to the data for transmission?

a) Check sum
b) Vertical Redundancy Check (VRC)
c) Longitudinal Redundancy Check (LRC)
d) Cyclic Redundancy Check (CRC)

Answer: d) Cyclic Redundancy Check (CRC)
Explanation: CRC uses polynomial codes to generate a checksum, which is appended to the data for transmission. At the receiver’s end, a similar calculation is done, and if the received checksum doesn’t match, an error is detected.

5. Which data link layer protocol is widely used in point-to-point and multipoint communication networks and supports both connection-oriented and connectionless communication?

a) HDLC
b) Framing

c) ARQ
d) Sliding Window

Answer: a) HDLC
Explanation: HDLC (High-Level Data Link Control) is a widely used data link layer protocol that supports both connection-oriented and connectionless communication in point-to-point and multipoint networks.

6. Which data link layer protocol is responsible for dividing a stream of bits into manageable frames for transmission?

a) ARQ
b) Sliding Window
c) Framing
d) HDLC

Answer: c) Framing
Explanation: Framing is the process of dividing a stream of bits into manageable frames for transmission over the network at the data link layer.

7. What does ARQ stand for in the context of data link layer protocols?

a) Automatic Repeat Query
b) Automatic Repeat Request
c) Adaptive Request Query
d) Adaptive Repeat Question

Answer: b) Automatic Repeat Request

Explanation: ARQ (Automatic Repeat Request) is a protocol used for error control in data transmission. It involves retransmitting data packets when errors are detected.

8. Which ARQ technique requires the sender to stop and wait for an acknowledgment before sending the next frame?

a) Selective Repeat
b) Sliding Window
c) Go-Back-N
d) Stop and Wait

Answer: d) Stop and Wait
Explanation: Stop and Wait ARQ requires the sender to send one frame at a time and then wait for an acknowledgment from the receiver before sending the next frame.

9. Which ARQ technique allows the sender to send multiple frames without waiting for an acknowledgment for each frame sent?

a) Stop and Wait
b) Go-Back-N
c) Sliding Window
d) Selective Repeat

Answer: c) Sliding Window
Explanation: Sliding Window ARQ allows the sender to send multiple frames without waiting for an acknowledgment for each frame sent, thus improving efficiency by utilizing the available bandwidth more effectively.

10. Which ARQ technique retransmits only the frames that are damaged or lost during transmission, rather than retransmitting the entire window of frames?

a) Sliding Window
b) Go-Back-N
c) Stop and Wait
d) Selective Repeat

Answer: d) Selective Repeat
Explanation: Selective Repeat ARQ retransmits only the frames that are damaged or lost during transmission, rather than retransmitting the entire window of frames, thus reducing retransmission overhead.