1. A network protocol is:

   ☐ a programming language for network code

   ☐ a type of computer that routes packets

   ☐ a physical cable that links two devices

   ☐ a set of rules both devices follow so they can communicate

2. HTTPS is:

   ☐ a faster version of FTP

   ☐ a file format

   ☐ HTTP over TLS – encrypted web traffic

   ☐ an email protocol

3. In circuit switching:

   ☐ a dedicated path is reserved for the whole conversation

   ☐ each packet may take a different route

   ☐ there is no setup time

   ☐ data is split into independent packets

4. What does a protocol define? Select **all** that apply.

   ☐ the format of the data, including where the addresses sit

   ☐ the order of messages and when to acknowledge

   ☐ the timing, such as timeouts and retransmissions

   ☐ the speed of the physical cable

   Tick every correct option.

5. What does HTTPS add over plain HTTP? Select **all** that apply.

   ☐ tampering with the data in transit is detected

   ☐ the server proves its identity with a certificate

   ☐ the traffic is encrypted, so an eavesdropper sees only ciphertext

   ☐ pages are compressed so they download faster

   Tick every correct option.

6. What is the main drawback of circuit switching?

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   ☐ the delay changes unpredictably during a call

   ☐ each packet needs a sequence number added

   ☐ data can arrive out of order at the receiver

7. A benefit of splitting networking into layers is:

   ☐ it makes the network slower on purpose

   ☐ it stores more data

   ☐ modularity – one layer can be replaced without changing the others

   ☐ it removes the need for protocols

8. IMAP leaves mail on the server and syncs it across all your devices, while POP3 typically downloads the mail and deletes it from the server.

   ☐ True ☐ False

9. Because each packet carries a sequence number, the destination can reassemble the message in the right order and re-request any missing packet.

   ☐ True ☐ False

10. The internet layer (IP) guarantees that every packet arrives.

    ☐ True ☐ False

1. **a set of rules both devices follow so they can communicate**

   A protocol defines the format, order, meaning, timing and error handling of messages – both ends must agree.

2. **HTTP over TLS – encrypted web traffic**

   HTTPS runs HTTP over TLS encryption (port 443), protecting the data in transit.

3. **a dedicated path is reserved for the whole conversation**

   Circuit switching reserves one path end-to-end (reserved bandwidth) – but it wastes the line during silences.

4. **the format of the data, including where the addresses sit; the order of messages and when to acknowledge; the timing, such as timeouts and retransmissions**

   Format, order, meaning, timing and error handling. The cable's speed is a property of the hardware, not of the agreement.

5. **tampering with the data in transit is detected; the server proves its identity with a certificate; the traffic is encrypted, so an eavesdropper sees only ciphertext**

   TLS supplies confidentiality, authentication and integrity. Compression is a separate feature of HTTP itself.

6. **the reserved line sits idle during silences and nobody else may use it**

   Reserving the path guarantees the rate and the order, and that is exactly what makes it wasteful. The other three describe packet switching.

7. **modularity – one layer can be replaced without changing the others**

   Each layer has one job and a clear interface, so (e.g.) Ethernet can be swapped for Wi-Fi without touching higher layers.

8. **True**

   That is why IMAP shows the same inbox on your phone and laptop, whereas POP3 ties mail to one device.

9. **True**

   Packets may arrive out of order or be lost; the sequence numbers (and TCP) put everything right.

10. **False**

    IP forwards packets and does not guarantee delivery. Reliability is added above it, by TCP, and UDP deliberately does without it.

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