

2. Data transmission

Starter Quiz ·

IGCSE Computer Science

Name: _____ Score: _____

1. A packet header contains:

- ☐ the whole file, so each packet can rebuild it alone
- ☐ the end-of-packet marker and the error-check value only
- ☐ the sender and receiver IP addresses and the packet number
- ☐ only the actual data being sent, split into equal pieces

2. In an even-parity system, the parity bit is set so that:

- ☐ the total number of 1s in the byte is even
- ☐ the data in the byte is encrypted for sending
- ☐ the number represented by the byte stays positive
- ☐ the byte always ends in 0 after the bit is added

3. What does encryption achieve?

- ☐ it compresses the data so that it takes less space
- ☐ it makes data travel across the network faster
- ☐ it stops data from being intercepted at all
- ☐ it makes intercepted data unreadable to the wrong person

4. Serial transmission:

- ☐ cannot be used on a network, only inside one computer
- ☐ sends several bits at once down several parallel wires
- ☐ sends one bit at a time down one wire and is good over long distances
- ☐ is always faster than parallel transmission over any distance

5. A parity check catches a single flipped bit, but if TWO bits flip the 1-count's parity can still look correct, hiding the error.

- ☐ True ☐ False

6. Symmetric encryption uses:

- ☐ a public key for encrypting and a private key for decrypting
- ☐ a single shared key for both encrypting and decrypting
- ☐ no key, because the method itself hides the data
- ☐ a parity bit added to every byte before sending

7. Half-duplex sends data both ways at the same time, like a phone call, while full-duplex sends both ways but only one at a time.

- ☐ True ☐ False

8. Asymmetric encryption needs the private key to be sent to everyone who wants to encrypt data for you.

- ☐ True ☐ False

9. A checksum detects errors by:

- ☐ recalculating a value from the received data and comparing it with the sent value
- ☐ encrypting the data so that changes become visible
- ☐ sending all of the data back to the sender to compare
- ☐ adding a single parity bit to the end of every byte

10. A benefit of USB is that:

- ☐ the device is detected automatically and the right driver is loaded
- ☐ every type of device needs its own different connector
- ☐ the cable can be any length without losing the signal
- ☐ it never carries power, so devices need their own supply

1. the sender and receiver IP addresses and the packet number

The header carries control info (addresses + packet number); the payload is the data; the trailer marks the end + error check.

2. the total number of 1s in the byte is even

Even parity makes the count of 1s even; the receiver re-counts to detect a single-bit error.

3. it makes intercepted data unreadable to the wrong person

Encryption scrambles data so interception is useless – it does not prevent the interception itself.

4. sends one bit at a time down one wire and is good over long distances

Serial = one bit at a time (cheaper, long-distance reliable); parallel = many bits at once (fast, short-distance).

5. True

That blind spot is why stronger checks (checksums, CRC) are used when reliability really matters.

6. a single shared key for both encrypting and decrypting

Symmetric uses one secret key that both sides must share – the risk is that key being stolen.

7. False

False. They are swapped: half-duplex sends both ways but one direction at a time (like a walkie-talkie), while full-duplex sends both ways at once (like a phone call). Simplex is one way only.

8. False

False. Only the public key is shared; senders encrypt with it, and the private key that decrypts never leaves the owner. Symmetric encryption is the kind where the one key must be shared.

9. recalculating a value from the received data and comparing it with the sent value

The receiver recomputes the checksum; if it differs from the sent one, the data is resent.

10. the device is detected automatically and the right driver is loaded

USB uses one standard connector, auto-detects devices, carries power, and only fits one way.