

2 An employee has a report that they need to email to their employer.

The employee compresses the report file before emailing it.

(a) State the effect the compression has on the report file.

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..... [1]

(b) Give **two** benefits of compressing the report file before emailing it.

1
.....
2
..... [2]

(c) The employee decides to use lossless compression to compress the file.

Explain why lossy compression is **not** suitable.

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..... [3]

(d) When the employee enters the email address, the computer uses Unicode to convert the email address to binary.

(i) State what Unicode is an example of.

..... [1]

(ii) Give **two** advantages of the computer using Unicode instead of American standard code for information interchange (ASCII).

1
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..... [2]

(iii) Give **one** disadvantage of the computer using Unicode instead of ASCII.

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..... [1]

(e) The report is broken down into packets to be emailed.

(i) Circle **three** items of data that can be found in the packet header.

- trailer
 - originator's address
 - payload
-
- interrupt
 - input
 - operating system
-
- destination address
 - antivirus
 - packet number

[3]

(ii) Each packet is sent along a different path from the employee's device to the employer's device.

Tick (✓) **one** box to show the name of this method of sending packets.

- A packet networking
- B packet circuiting
- C packet switching
- D packet transferring

[1]

(iii) A hardware device is used to control the path that each packet takes.

Give the name of this hardware device.

..... [1]

(f) The email data is checked for errors after it has been transmitted, using an echo check and a checksum.

(i) Explain how the echo check is used to check for errors in the email data.

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..... [3]

(ii) In the checksum error detection method, two values are compared after transmission. If the values do **not** match, an error is detected.

Explain why the values **not** matching would show an error has occurred.

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..... [2]

(g) The email data is encrypted using asymmetric encryption before it is sent.

(i) Give **one** reason why the email data is encrypted.

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..... [1]

(ii) Give **one** similarity between symmetric encryption and asymmetric encryption.

..... [1]

(iii) Give **two** differences between symmetric encryption and asymmetric encryption.

1
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2
..... [2]