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Modern computers often come with hard disks and solid-state disks (SSD) but no optical disk drives.

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Explain why computers often have both of these types of storage rather than just having a hard disk or just having an SSD.

[2 marks]

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2

Explain why it is faster to access data from solid state storage than from an optical disk.

[2 marks]

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The life-blogging device contains a solid-state disk (SSD). It stores its data on this in addition to uploading the data to a server.

Explain **two** reasons why an SSD is a better choice than a magnetic hard disk for this application.

[4 marks]

Reason 1 _____

Reason 2 _____

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A company needs to keep a file server in a secure room. The file server will need to be accessible for routine maintenance and in emergencies. All company staff carry an ID card but not all staff should be allowed into the secure room.

The company has replaced the keypad controlling an electronic door lock on the room with an RFID reader and replaced all staff ID cards with ones containing an RFID tag to control access.

State **three** characteristics of RFID technology **and** explain why each of these makes it a suitable choice in this scenario.

[3 marks]

0 4 . 1 RFID tags can be read by an RFID reader.

Describe how data is read from an RFID tag.

[3 marks]

0 4 . 2 An RFID tag can be active or passive. A passive tag must be moved within a few centimetres of an RFID reader to be read. An active tag will have its own power source, which allows it to be read from a greater distance.

It is decided that RFID tags will be used in passports to store personal information.

Explain why passive tags are likely to be a more appropriate choice than active tags for use in passports.

[2 marks]

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A smartphone company has designed a device that can be put into items such as luggage to help locate these items if they are lost. The device works by sending an encrypted signal containing its current location to nearby smartphones. The smartphones relay the signal to the company's servers via the Internet, allowing a user to see the device's exact location using a mobile phone app.

The company expects to sell hundreds of millions of devices. The data collected from each device will be permanently kept in secondary storage on the company's servers. The company is planning to use solid-state drives in the servers that will hold device location data but is unsure whether using solid-state drives is a good idea.

Discuss a range of moral, ethical, legal and cultural issues raised by the new device **and** explain the properties of solid-state drives that the company should consider when deciding on a secondary storage technology.

In your answer you will be assessed on your ability to follow a line of reasoning to produce a coherent, relevant and structured response.

[12 marks]

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