Answers

1. Designz4All is a design company which currently utilises a wireless network in their office.

Their staff are facing difficulties when transferring their design work to their file server and other staff and clients. Their IT specialist needs to write a report to the company’s managing director explaining why a more expensive wired system would be better suited to the company’s needs.

(a) Explain **two** advantages of using a wired connection rather than a wireless one. [4]

Provides greater bandwidth / faster (network) connection (1) which allows files to be transferred faster / allows more files to be transmitted in a given time (1) which will improve productivity/efficiency (1).

Improved security (1) as it does not radiate signals like a wireless method (1) which makes it harder to hack without access to the building/network ports (1).

A wired connection is more reliable (1) as it is not affected by the number of users / interference / location in a building (1).

Wired connections maintain the same speed (up to 100m) (1) whereas Wi-Fi connections will slow down as the signal strength gets weaker (1).

**Additional guidance**

Responses must relate to the network, not the Internet.

(b) As part of the network upgrade, Designz4All is considering how they connect their Local Area Network (LAN) to the Internet.

Discuss the possible methods that they could choose for their Internet connection. [6]

**Mobile broadband**

This would be easy and quick to set up (no delay for weeks to for connection).

It depends on their location as to whether it would be a fast 4G connection or slower 3G connection.

Likely to be expensive compared to wired connections.

Likely to be slow when used on multiple computers.

Need to purchase a specialised mobile hub.

**‘Fibre’ broadband / FTTC**

This can use existing copper phone line (coaxial cables used by Virgin Media could be faster)

Reliable and relatively fast (up to 70Mbps download and 20Mbps upload).

Could cope with being shared by multiple users.

May take days or weeks to connect the line.

Requires modem/router to work.

**Full fibre optic / FTTP**

Very fast and reliable.

Will easily cope with multiple users.

May require a specialised cable to be laid which will take time and be costly.

Requires specialist router for fibre optic connection.

| **Level** | **Mark** | **Descriptor** |
| --- | --- | --- |
| Level 0 | 0 | No rewardable material. |
| Level 1 | 1-2 | Technical vocabulary is used but it is not used appropriately to support arguments, in relation to the issues of the question.  Issues are identified but chains of reasoning are not made, leading to a superficial understanding. |
| Level 2 | 3-4 | Accurate technical vocabulary is used to support arguments but not all arguments are relevant to the issues of the question.  There is consideration of relevant issues using logical chains of reasoning.  Considers the various elements of the question. |
| Level 3 | 5-6 | Fluent and accurate technical vocabulary is used to support arguments that are relevant to the issues of the question.  There is a balanced and wide-ranging consideration of relevant issues, using coherent and logical chains of reasoning that shows a full awareness.  Carefully considers the various elements of the question. |

(c) Designers working for Designz4All often need to visit clients to show them their designs.

When travelling by train, they use a company laptop with mobile data to connect to   
the Internet.

Explain **two** problems that staff might experience when using a mobile data   
connection to travel by train. [4]

The (mobile data connection) may lose signal / move to a location with poor signal such as a tunnel (1) which will prevent them from accessing the internet / sending emails / using cloud services (1).

Designs generated may have large file sizes (1) which may take a long time to transmit (1).

The phone contract may have data usage limits (1) which prevent designs from being downloaded/uploaded / incur additional costs (1).

2. A Bed and Breakfast (B&B) is looking to increase the number of business customers they have. For each of the following requirements, explain which technology you would recommend for the connection.

(a) The ability to connect to a radio in their rooms so they plan music from a   
smartphone or tablet. [2]

Bluetooth (1) almost all modern mobile devices support this / easy to connect   
a device (1).

(b) The ability to connect mobile devices and laptops to the Internet. [2]

Wi-Fi (1) – doesn’t require a cable for mobile devices / easy to connect anywhere within range of the Access Point (AP) / easy to install as no need to lay cables (1).

(c) A room where guests can print documents from their mobile devices or laptops. [2]

Wi-Fi / Bluetooth (for Apple AirPrint / Google Cloud Print) (1) this removes the need for cables which won’t work with mobile devices / gives good support to many devices for printing (1).

[Total 20 marks]