

3. Hardware

3.4 Network hardware

- 1 Six computer terms and six descriptions are shown below.

Draw a line to link each term to its appropriate description.

Term	Description
Browser	Signal sent to a processor which may cause a break in execution of the current routine, according to priorities
HTML	Company that provides individual's access to the Internet and other services such as web hosting and emails
Internet service provider	Software application used to locate, retrieve and display content on the World Wide Web e.g. web pages, videos and other files
Interrupt	Hardware identification number that uniquely identifies each device on a network; it is manufactured into every network card and cannot be altered
IP address	Authoring language used to create documents on the World Wide Web; uses tags and attributes
MAC address	Location of a given computer/device on a network; can be a static or dynamic value

- 2 At the end of the flight, all of the data are sent to the aeroplane engine manufacturer using the Internet.

The computer in the aeroplane has a MAC address and an IP address.

State what is meant by these two terms.

MAC address

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.....

IP address

.....

.....

[2]

- (d) When sending this data, security is very important. Data are sent over the Internet using Transport Layer Security (TLS) protocol.

Name the **two** layers that make up TLS.

1

2

[2]

3 Kamil correctly answers an examination question about a number of internet terms.

Six different terms have been removed from Kamil's answer.

Complete the sentences in Kamil's answer, using the list given. Not all terms in the list need to be used.

- browser
- connection
- domain name server (DNS)
- Internet
- Internet Service Provider (ISP)
- IP address
- MAC address
- network
- protocol
- uniform resource locator (URL)
- webpages
- hypertext mark-up language (HTML)

A is a program that allows a user
to view

An is a company that provides a
connection to access the

The main that governs the
transmission of data using the Internet is http.

The is provided by the network,
and given to each device on the network.

[6]

4 Six internet terms and six definitions are listed.

Draw a line to connect each term to a correct definition.

Internet term	Definition
Browser	A program that allows a user to view webpages
Internet Service Provider (ISP)	The main protocol that governs the transmission of data using the Internet
Hyper Text Transfer Protocol (HTTP)	The website address that is typed into the address bar
Uniform Resource Locator (URL)	An address given to each device on a network. It is provided by the network
MAC address	A unique address given to a device on a network. It is provided by the manufacturer
IP address	A company that provides a connection to access the Internet

[5]

(b) Explain what is meant by a MAC address.

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..... [4]

(d) Customers will use a web browser to access Victoria's website.

Victoria writes a paragraph of text to explain how the website will be displayed on a customer's computer.

Use the list given to complete Victoria's paragraph by inserting the correct **six** missing terms. Not all terms will be used.

- browser
- domain name
- firewall
- hexadecimal
- HTML
- https
- MAC address
- search engine
- Uniform Resource Locator (URL)
- web server

The user enters the website into the address bar.

The protocol that is used is The URL contains

the for the website. This is used to look up the

IP address of the company. A DNS server stores an index of IP addresses.

The browser sends a request to the as this is

where the files for the website are stored. The files are sent back to the

..... as files.

This is interpreted by the browser and the web page is displayed.

[6]

7 (a) A computer can have both a MAC address and an IP address.

Four statements are given about MAC addresses and IP addresses.

Tick (✓) to show whether each statement is **True** or **False**.

Statement	True (✓)	False (✓)
A MAC address is unique to a computer on a network		
Once an IP address has been set it cannot be changed		
A MAC address is made up of the computer's serial number and the IP address		
If a computer does not have an IP address it cannot communicate with another device using the Internet		

[4]

3 (c) All smartphones have a MAC address.

(i) State what is meant by the term MAC address.

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

(ii) Describe the structure of a MAC address.

.....
.....
.....
.....
.....
..... [3]

-)(b) Tammy connects the computer to her home network. The computer has a MAC address and an IP address.

A paragraph is given about MAC addresses and IP addresses.

Complete the paragraph using the list of terms given. Not all terms need to be used.

- compiled
- computer
- control
- dynamic
- identify
- packet
- principal
- protocol
- similar
- unique

A MAC address is a media access address.

A network device has a MAC address that can help the device in the network. An IP address is an Internet address. An IP address can be static or

[5]

- (c) Tammy uses a browser when accessing the Internet.

Describe the role of the browser.

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..... [4]

10 (b) Benedict's computer is also assigned a Media Access Control (MAC) address.

(i) Identify **one** similarity between an IP address and a MAC address.

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

(ii) Identify **two** differences between an IP address and a MAC address.

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

11 Greta has a computer that she uses for schoolwork and leisure.

(a) The computer has the Media Access Control (MAC) address:

00:A0:C9:14:C8:29

(i) Tick (✓) to show whether the MAC address is initially assigned to the computer by the network, the manufacturer or the user.

	Tick (✓)
Network	<input type="checkbox"/>
Manufacturer	<input type="checkbox"/>
User	<input type="checkbox"/>

[1]

- 12** Many devices have a Media Access Control (MAC) address.

Give **three** features of a MAC address.

Feature 1

.....

Feature 2

.....

Feature 3

.....

[3]

- 13** A computer can have both a Media Access Control (MAC) address and an Internet Protocol (IP) address.

(a) Give **two** similarities between a MAC address and an IP address.

Similarity 1

.....

Similarity 2

.....

[2]

(b) Give **two** differences between a MAC address and an IP address.

Difference 1

.....

Difference 2

.....

[2]

14 A user wants to connect their computer to a network.

(a) (i) Identify the component in the computer that is needed to access a network.

..... [1]

(ii) Identify the type of address that is allocated to the component by the manufacturer, which is used to uniquely identify the device.

..... [1]

(b) A dynamic internet protocol (IP) address is allocated to the computer when it is connected to the network.

(i) Identify the device on the network that can connect multiple devices and automatically assign them an IP address.

..... [1]

(ii) Describe what is meant by a dynamic IP address.

.....
.....
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.....
.....
..... [3]

15 A computer is connected to a network and assigned an IPv4 address.

(a) Tick (✓) **one** box to show which device would assign the IPv4 address to the computer.

A Domain name server (DNS)

☐

B Network interface card (NIC)

☐

C Router

☐

D Web server

☐

[1]

(b) Describe the characteristics of an IPv4 address.

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..... [4]

16 Five network terms or definitions are given in the table.

Complete the table by giving the missing term or definition.

Term	Definition
router	<div></div> <div></div> <div></div> <div></div>
<div></div>	This address is assigned by the network and used to identify a device on a network.
network interface card (NIC)	<div></div> <div></div> <div></div> <div></div>
<div></div>	This address is assigned by the manufacturer and is used to uniquely identify the device.
<div></div>	This can be hardware or software based and filters traffic coming into and out of a network.

17 A device can be given an internet protocol (IP) address. This can be an IPv4 or IPv6.

(a) Give **one** similarity between IPv4 and IPv6.

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

(b) Describe **two** differences between IPv4 and IPv6.

1
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.....
.....
2
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.....
..... [4]

(c) A web page is requested using an IP address.

(i) Identify the system that stores a database of uniform resource locators (URLs) and their corresponding IP addresses.

..... [1]

(ii) Identify the software that sends a request to the IP address to obtain the web page data.

..... [1]

18 A computer has both a media access control (MAC) address and an internet protocol (IP) address.

(a) Tick (✓) **one** box to show which of the statements is correct about the MAC address.

A It is assigned by the manufacturer.

☐

B It is assigned by a router.

☐

C It can be static or dynamic.

☐

D It is made up of three different parts.

☐

[1]

(b) An IP address can have an IPv4 or IPv6 format.

(i) Give an example of an IP address that has an IPv4 format.

..... [1]

(ii) Give **two** characteristics of the IPv6 format.

1

.....

2

.....

[2]