

Past-paper walk-through

The internet and the world wide web ■ 5.1

eXercise

Questions in this set

- 0478/12 N25 Q6 ■ 14 marks
- 0478/12 N24 Q7 ■ 14 marks
- 0478/13 N24 Q4 ■ 6 marks
- 0478/13 N24 Q6 ■ 10 marks
- 0478/12 J24 Q11 ■ 8 marks
- 0478/12 M24 Q4 ■ 5 marks
- 0478/12 J23 Q8 ■ 5 marks

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 6

0478/12 N25 ■ Q6 ■ 14 marks

An online clothing company has a homepage at the uniform resource locator (URL)

<https://www.cieclothes.com/index.html>

(a) Write down the **three** different parts of the URL shown by the labels a, b and c.

<https://www.cieclothes.com/index.html>

[3]

Question 6

Term	Description
hypertext markup language (HTML)	
domain name server (DNS)	
.....	It is a numerical address used to locate the web server.

Question 6

.....	It is a secure protocol that can be used to transmit data sent to and received from a web server.
.....	It is a piece of software that is used to display web pages.

Question 6

0478/12 N25 ■ Q6 ■ 14 marks

An online clothing company has a homepage at the uniform resource locator (URL)
<https://www.cieclothes.com/index.html>

(b) The web pages are stored on a web server. A proxy server is used to stop distributed denial of service (DDoS) attacks on the web server.

Describe how the proxy server can stop a DDoS attack reaching a web server.

[3]

Question 6

0478/12 N25 ■ Q6 ■ 14 marks

An online clothing company has a homepage at the uniform resource locator (URL)
<https://www.cieclothes.com/index.html>

(c) Customers use the website to buy clothing from the company.

Complete the table with the missing terms and descriptions about retrieving and displaying web pages.

Term	Description
hypertext markup language (HTML)	
domain name server (DNS)	
	It is a numerical address used to locate the web server.
	It is a secure protocol that can be used to transmit data sent to and received from a web server.
	It is a piece of software that is used to display web pages.

Question 6

[5]

Question 6

0478/12 N25 ■ Q6 ■ 14 marks

An online clothing company has a homepage at the uniform resource locator (URL)

<https://www.cieclothes.com/index.html>

(d) The clothing company uses cookies to store customer details.

Complete the statements about cookies.

Use terms from the list. Not all terms need to be used. You should only use a term once.

- asymmetric
- DNS
- dynamic
- persistent
- session

Question 6

- static
- symmetric
- user
- utility software
- web browser

Cookies are stored and managed by the ____.

____ cookies are temporary files that are created when a user visits a web page.

____ cookies are permanent files that are created when a user visits a web page.

[3]

Solution 6

(a)

Mark scheme

- One mark for each correct label
 - ■ Protocol
 - ■ Domain name
 - ■ Web page name // file name

Solution 6

(b)

Mark scheme

- Any three from:
 - It examines each request/incoming transmission
 - It can slow down the rate at which/limits the number of requests sent to the server
 - It can use caching ...
 - ... to respond to the request (rather than forwarding it to the server)
 - It can stop any requests from a certain IP

Solution 6

(c) Mark scheme

- One mark for each correct missing term or definition.
- Term
- Description hypertext markup language
- (HTML)
- It is the language that is often used to write/author web pages.
- domain name server (DNS)
- It is a system that stores URLs/domain names and their matching/corresponding

Solution 6

- IP addresses // It is a system that provides the matching IP address for a webpage to the web browser.
- IP address
- It is a numerical address used to locate the web server.
- SSL/TLS/HTTPS
- It is a secure protocol that can be used to transmit data sent to and from a web server.
- web browser
- It is a piece of software that is used to display web pages.

Solution 6

(d)

Mark scheme

- One mark for each correct missing term in the correct place.
- Cookies are stored and managed by the web browser.
- Session cookies are temporary files that are created when a user visits a web page.
- Persistent cookies are permanent files that are created when a user visits a web page.

Question 7

0478/12 N24 ■ Q7 ■ 14 marks

A student enters the uniform resource locator (URL) for a web page into their tablet computer.

(a) State what is meant by a URL.

[1]

Question 7

0478/12 N24 ■ Q7 ■ 14 marks

A student enters the uniform resource locator (URL) for a web page into their tablet computer.

(b) Identify **two** different parts of a URL.

1. 2.

[2]

Question 7

0478/12 N24 ■ Q7 ■ 14 marks

A student enters the uniform resource locator (URL) for a web page into their tablet computer.

(c) The student enters the URL into a piece of software that then displays the web page.

Identify the name of this software.

[1]

Question 7

0478/12 N24 ■ Q7 ■ 14 marks

A student enters the uniform resource locator (URL) for a web page into their tablet computer.

(d) Draw and annotate a diagram to show how the web page is located and retrieved to be displayed on the student's tablet computer. **[5]**

Question 7

0478/12 N24 ■ Q7 ■ 14 marks

A student enters the uniform resource locator (URL) for a web page into their tablet computer.

(e) The data for the web page is transmitted using the secure socket layer (SSL) protocol.

Complete the paragraph about the SSL protocol.

Use only terms from the list.

Not all terms need to be used. Some terms may be used more than once.

- encrypted
- file server
- hypertext markup language (HTML)
- hypertext transfer protocol (HTTP)
- operating system

Question 7

- search engine
- unencrypted
- URL
- web browser
- web server

The ____ asks the ____ to identify itself. The ____ sends back its digital certificate. The ____ authenticates the digital certificate. If it is authentic, ____ data transmission begins.

[5]

Solution 7

(a)

Mark scheme

- A text-based address for a website/web page

Solution 7

(b)

Mark scheme

- Any two from:
 - ■ Protocol
 - ■ Domain name
 - ■ File name

Solution 7

(c)

Mark scheme

- Web browser

Solution 7

(d) Worked steps

Draw four labelled boxes — **browser**, **DNS**, **web server**, **student's screen** — and one annotated arrow per step. One mark for each correct part.

- The **URL** is sent from the web browser to the **DNS**.
- The **DNS** finds the matching **IP** address from its table of URLs and IP addresses.
- The **IP** address is returned to the browser.
- The **browser** sends a request to the **web server** at that address.
- The **web server** returns the **web page**, which the **browser** renders and displays.

Solution 7

The marks are for **steps**, so every arrow needs a label saying what travels along it and which way. A diagram of four correctly named boxes with plain lines between them earns almost nothing.

Two details that add marks if there is room: the DNS holds a **table or database** mapping URLs to IP addresses, and if it does not have the entry it **queries another DNS server**.

Draw the round trips in full. Each exchange is a request and a response, so the finished diagram has four arrows, not two. [Mark scheme](#)

- One mark for each correct part of the diagram.
- The diagram shows:

Solution 7

- ■ URL sent from web browser to the DNS
- ■ DNS finding matching IP address
- ■ If it cannot find the URL, it is sent to the next DNS (until found)
- ■ IP address returned to web browser
- ■ Request sent from web browser to web server (for web page)
- ■ Web page/HTML files sent from web server to web browser
- ■ Web browser rendering HTML
- For example:
 - 5
 - Web browser

Solution 7

- DNS
- Web server
- DNS
- URL sent to DNS
- Searches for matching IP address
- IP address returned
- Request sent
- Sent to next
- DNS if URL not found
- Web pages sent

Solution 7

(e)

Mark scheme

- One mark for each correct term in the correct order:
 - ■ Web browser
 - ■ Web server
 - ■ Web server
 - ■ Web browser
 - ■ Encrypted

Question 4

0478/13 N24 ■ Q4 ■ 6 marks

Complete the table to give the missing term or description for the internet terms.

Internet term	Description
	the collection of web pages accessed using the internet
	the address given to a device when it connects to the internet
web browser	
	the hardware that stores a database of matching website and IP addresses
	a type of hardware that can be used to prevent a distributed denial of service (DDoS) attack
hacking	

Question 4

[6]

Question 4

Internet term	Description
.....	the collection of web pages accessed using the internet
.....	the address given to a device when it connects to the internet
web browser	

Question 4

.....	the hardware that stores a database of matching website and IP addresses
.....	a type of hardware that can be used to prevent a distributed denial of service (DDoS) attack
hacking	

Solution 4

One mark for each correct term or description in the correct place.

Term

- World wide web // WWW
- IP (address)
- Domain name server // DNS
- Proxy server

Description

- (Web browser) **Software/application** that allows users to view/access web pages by rendering HTML
- (Hacking) Gaining **unauthorised** access to a computer/system

Question 6

0478/13 N24 ■ Q6 ■ 10 marks

(a) Complete the statements about cookies.

Use only terms from the list.

Not all terms need to be used. Some terms may be used more than once.

- binary
- close
- denary
- expire
- hexadecimal
- image
- malware

Question 6

- operating system
- permanent
- persistent
- session
- sound
- temporary
- web browser

Cookies are small text files that are stored by a ____.

____ cookies are ____ text files that are deleted when the ____ is closed.

____ cookies are ____ text files that are stored on a user's secondary storage device until they are manually deleted or they ____.

Question 6

0478/13 N24 ■ Q6 ■ 10 marks

(b) Give **three** examples of the use of cookies.

1. 2. 3.

[3]

Solution 6

(a) Mark scheme

One mark for each correct term in the correct order:

- web browser
- session
- temporary
- web browser // session
- persistent
- permanent
- expire

Solution 6

(b) Mark scheme

Any three from:

For example:

- User preferences // by example
- Login details
- Payment details
- User's **personal** details e.g. address
- Contents of a shopping cart
- Targeted advertising

Question 11

0478/12 J24 ■ Q11 ■ 8 marks

A company has a website. Users use the internet and the world wide web to access the website.

(a) Describe the difference between the internet and the world wide web. [2]

(b) The website has a uniform resource locator (URL). The URL has three different parts.

Identify the **three** different parts that are included in the URL.

1. 2. 3. [3]

(c) One function of a web browser is to provide an address bar for a user to enter a URL.

Give **three** other functions of a web browser.

1. 2. 3. [3]

Solution 11

(a)

Mark scheme

- Any two from:
 - ■
 - The internet is the infrastructure
 - ■
 - The world wide web is a collection of web pages

Solution 11

(b)

Mark scheme

- Protocol
- Domain name
- File name // web page name

Solution 11

(c) Mark scheme

- Any three from:
- Example:
 - ■
- Displays a web page
- ■
- Storing bookmarks/favourites
- ■
- Recording user history

Solution 11

- ■
- Allowing use of multiple tabs
- ■
- Storing cookies
- ■
- Providing navigation tools
- ■
- Can set a home page

Question 4

0478/12 M24 ■ Q4 ■ 5 marks

A student enters a uniform resource locator (URL) into their web browser.

Draw and annotate a diagram to show the process from the user entering the URL to the web browser displaying the web page.

[5]

Solution 4

Worked steps

A “draw and annotate” question is marked on the **parts of the diagram**, not on artistry. Draw the four actors as labelled boxes — **browser / computer**, **DNS**, **web server**, and the **user’s screen** — and put one labelled arrow between them for each step.

Five marks, one per part:

- The **URL is sent from the browser to the DNS**.
- The **DNS stores a table of URLs and their IP addresses**, and finds the IP address matching that URL.
- The **DNS sends the IP address back** to the browser.
- The **browser requests the page from the web server** at that IP address.

Solution 4

Worked steps

- The **web server sends the page back**, and the browser **renders it** for the user.

Two habits earn the marks:

- **Annotate every arrow** with what travels along it — “URL”, “IP address”, “page request”, “HTML” — and with its direction. An unlabelled arrow between two correct boxes scores nothing, because the mark is for the step, not the line.
- **Show the round trip.** Each of the two exchanges is a request *and* a response, so there are four arrows, not two.

If the DNS does not hold the address it asks another DNS server higher up the hierarchy, and an error is returned if none does. That is worth one extra annotation when there is room. **Mark scheme**

Solution 4

Worked steps

- Any five marks for each part of diagram:
 - ■ URL from computer/browser to DNS
 - ■ DNS storing table/database of URL and IPs // DNS finding IP for URL
 - ■ DNS sending IP to computer / browser
 - ■ DNS sending to higher DNS if not found
 - ■ Web browser/computer sending request to IP of web server
 - ■ Web server processing request
 - ■ Web page data sent from server to computer / web browser

Question 8

0478/12 J23 ■ Q8 ■ 5 marks

8 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.

Solution 8

(a)

Mark scheme

- ■
- C
- 1

Solution 8

(b) Mark scheme

- Four marks from:
- Any FOUR from:
 - ■
 - It is denary based
 - ■
 - ... with numbers between 0 and 255
 - ■
 - It is 32 bits

Solution 8

- ■
- 4 sets/groups of numbers
- ■
- ... separated by dots
- Any TWO from:
 - ■
 - It is a unique address
 - ■
 - It can be static or dynamic
 - ■

Solution 8

- It can be public or private
- ■
- It contains the network prefix
- ■
- ... and the host number
- 4
- 0478/12
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