

0 1 . 1 Explain **two** differences between a LAN and a WAN.

[4 marks]

Difference 1: _____

Difference 2: _____

0 1 . 2 HTTP and HTTPS are two application layer protocols.

Explain why HTTPS is often used rather than HTTP.

[1 mark]

0 1 . 3 The application layer and the network (internet) layer are two of the layers within the TCP/IP stack.

What are the names of the other **two** TCP/IP stack layers?

[2 marks]

1 _____

2 _____

0	1	.	4
---	---	---	---

What is the purpose of the network (internet) layer within the TCP/IP stack?

[2 marks]

0	1	.	5
---	---	---	---

Explain how MAC address filtering works.

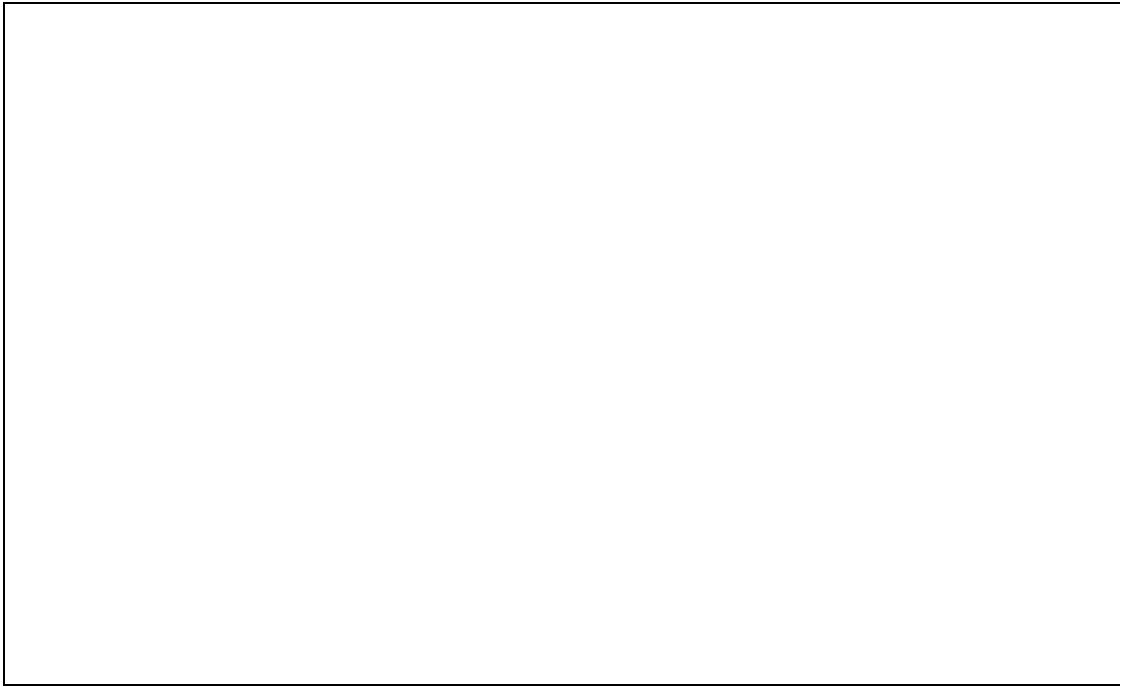
[2 marks]

Turn over for the next question

0	2	.	1
---	---	---	---

Draw a simple diagram to show a star network topology containing four desktop computers.

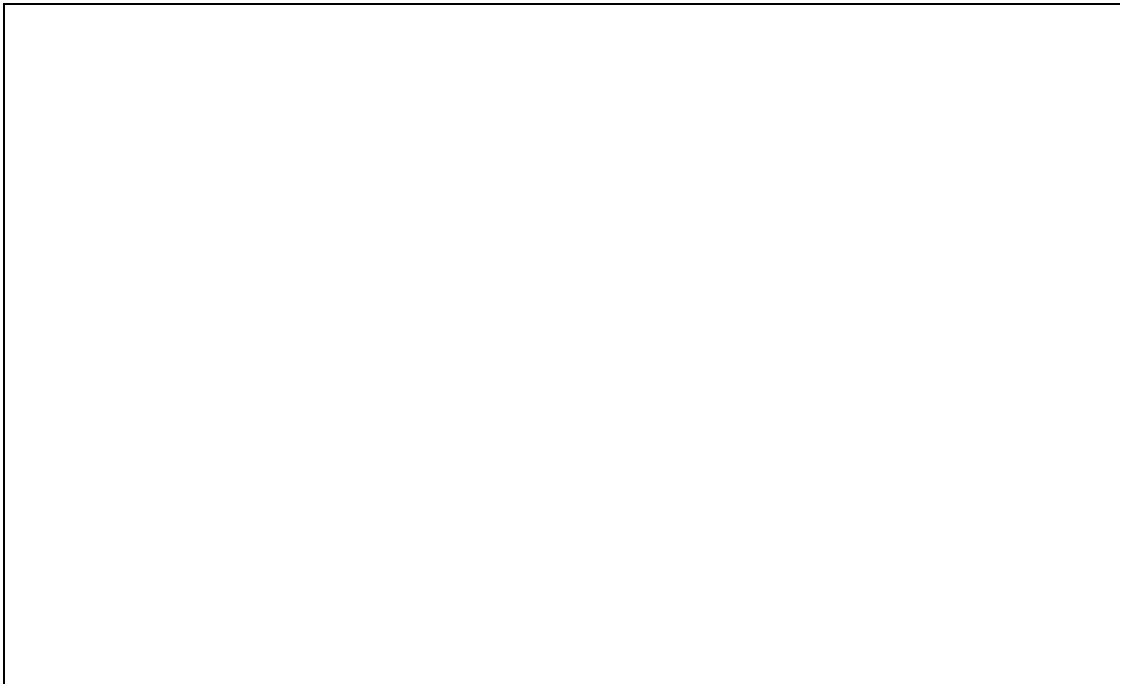
[2 marks]



0	2	.	2
---	---	---	---

Draw a simple diagram to show a bus network topology containing four desktop computers.

[2 marks]



[2 marks]

[1 mark]

[9 marks]

02.6

Define the term **network protocol**.

[2 marks]

02.7

Which **two** of the following are email protocols?

Shade **two** lozenges.

[2 marks]

- A

FTP

☐
- B

HTTP

☐
- C

IMAP

☐
- D

SMTP

☐
- E

TCP

☐
- F

UDP

☐

Explain why a firewall improves network security.

[2 marks]

A company has decided to move its business online but it is concerned about making sure that only authorised users can gain access to the system. The company has set up a CAPTCHA system to check that the user is not a robot.

Explain **three** different electronic methods that could then be used to confirm user identity.

[6 marks]

[illegible]

03.3

Penetration testing can be conducted as either black-box or white-box testing.

Explain the difference between these two types of penetration testing.

[4 marks]

04

The four layers of the TCP/IP network model are shown below.

For each row in **Figure 3**, write the letter **A**, **B**, **C** or **D** that matches the description.

Each letter should only be used once.

[2 marks]

- A Application layer
- B Transport layer
- C Internet layer
- D Link layer

Figure 3

Description	Letter
Addresses data for transmission	
Sets up the communication between the two hosts	
Where the network hardware is located	
Where the user software, such as web browsers or email programs, operates	

[2 marks]

[9 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

[illegible]

0 5 . 3

State which layer of the TCP/IP model each of the network protocols operates at by ticking **one** box in **each** row of **Table 1**.

[4 marks]

Table 1

Network Protocol	Application layer	Transport layer	Internet layer	Link layer
HTTP				
UDP				
IP				
IMAP				

0	6
---	---

Computer networks can be installed using wired or wireless technology.

0	6	.	1
---	---	---	---

State **one** wireless method used to connect devices on a Personal Area Network (PAN).

[1 mark]

0	6	.	2
---	---	---	---

Describe **two** differences between a Local Area Network (LAN) and a Wide Area Network (WAN).

[2 marks]

1

2

0	6	.	3
---	---	---	---

Give **three** advantages of using a wireless network instead of a wired network.

[3 marks]

1

2

3

0 6 . 4

Shade **one** lozenge to indicate the application layer protocol used for sending emails from a client device to a mail server.

[1 mark]

- | | | |
|----------|------|--------------------------|
| A | FTP | <input type="checkbox"/> |
| B | HTTP | <input type="checkbox"/> |
| C | SMTP | <input type="checkbox"/> |
| D | UDP | <input type="checkbox"/> |

0 6 . 5

Explain the purpose of the HTTPS protocol.

[2 marks]

Turn over for the next question

0 7 . 1 Describe **two** differences between a PAN and a WAN.

[2 marks]

Difference 1 _____

Difference 2 _____

0 7 . 2 Shade **two** lozenges to show which statements are true about LANs.

[2 marks]

A LANs always use the Ethernet protocol.

☐

B LANs always use wireless technology.

☐

C LANs are usually controlled or owned by a single organisation.

☐

D LANs connect a maximum of 150 devices.

☐

E LANs cover one room, building or site.

☐

0 7 . 3 State **two** differences between a bus topology and a star topology.

[2 marks]

Difference 1 _____

Difference 2 _____

07.4 HTTP is an example of a network protocol.

Define the term **network protocol**.

[2 marks]

07.5 The application layer and the transport layer are two of the layers within the TCP/IP model.

What are the names of the other **two** layers of the TCP/IP model?

[2 marks]

1

2

Turn over for the next question

0	8
---	---

Most schools have a computer network.

0	8	.	1
---	---	---	---

Some schools allow teachers to access the school network from their home computers.

Give **one** reason why some schools allow this and **one** reason why some schools do not allow this.

[2 marks]

Reason for:

Reason against:

0	8	.	2
---	---	---	---

State **three** advantages of using a computer network.

[3 marks]

PANs and LANs are two different types of network.

0	8	.	3
---	---	---	---

Describe **one** difference between a PAN and a LAN.

[1 mark]

0	8	.	4
---	---	---	---

Give **one** example of where a PAN could be used.

[1 mark]

0 8 . 5

When two computers on a network communicate with each other they need to use the same protocol.

Define the term network protocol.

[2 marks]

For questions **0 3 . 6** to **0 3 . 8** shade **one** lozenge to indicate the most suitable protocol to use in the situation described.

0 8 . 6

Used to retrieve email stored on a server

[1 mark]

- | | | |
|----------|-------|-----------------------|
| A | HTTP | <input type="radio"/> |
| B | HTTPS | <input type="radio"/> |
| C | FTP | <input type="radio"/> |
| D | SMTP | <input type="radio"/> |
| E | IMAP | <input type="radio"/> |

0 8 . 7

Used to make a payment securely when purchasing goods from a website

[1 mark]

- | | | |
|----------|-------|-----------------------|
| A | HTTP | <input type="radio"/> |
| B | HTTPS | <input type="radio"/> |
| C | FTP | <input type="radio"/> |
| D | SMTP | <input type="radio"/> |
| E | IMAP | <input type="radio"/> |

08.8

Used to send an email from a client machine to an email server.

[1 mark]

- A

HTTP

☐
- B

HTTPS

☐
- C

FTP

☐
- D

SMTP

☐
- E

IMAP

☐

08.9

TCP/IP is a protocol used in networking. There are 4 layers in the TCP/IP stack.

Complete the table by placing the four layers of the TCP/IP stack into order (1-4) where 1 is the top layer and 4 is the bottom layer.

[3 marks]

Layer	Order (1-4)
Transport	
Link	
Internet	
Application	

09

The games café is evaluating the security for their network.

09.1

State **two** reasons why using a biometric authentication measure is better than password authentication for staff accounts.

[2 marks]

09.2

Explain why it would not be appropriate for the café to use MAC address filtering on their wireless network.

[2 marks]

101

Define the term **computer network**.

[2 marks]

102

A school has purchased new computers for students and staff to use.

The school is considering installing the computers in a **network**.

Discuss the **advantages and disadvantages** to the school, staff and students of having the computers installed in a network.

[6 marks]

[illegible]

Turn over for the next question

1	1
---	---

SMTP and IMAP are email protocols.

Describe how SMTP and IMAP are used.

[2 marks]

SMTP _____

IMAP _____

1	2
---	---

Describe how encryption can make the transmission of data more secure.

[2 marks]
