

1(a). An airport has computers that are connected together on a Local Area Network (LAN).

Each computer has an IP address and a MAC address.

- i. Give **one valid** example of an IPv4 address and **one valid** example of an IPv6 address.

IPv4

IPv6

----- [2]

- ii. Describe the format of a MAC address.

----- [2]

(b). The airport currently has wired connections in their Local Area Network.

- i. Describe **two** benefits to the airport of using wired connections in their network.

1

2

----- [4]

- ii. Explain the reasons why the airport should also allow the network to be accessed using a wireless connection.

----- [3]

(c). One office in the airport has five computers connected to one switch. There are two printers in the office that can be accessed by all computers.

The computers are connected using a star topology.

- i. Draw a diagram to show how the five computers, switch and two printers are connected in a star topology.



[3]

- ii. Give **one** benefit and **one** drawback of the office using a star topology instead of a mesh topology.

Benefit

Drawback

----- [2]

iii. Describe the role of the switch in the star topology.

[3]

2(a). A student is performing a range of actions on the internet using their computer.

A range of protocols are used for the transmission of data by the student’s computer, and the web servers they are accessing.

i. Complete the table by identifying the most appropriate protocol for each of the tasks the student is performing.

Task	Protocol
Requesting to view a news webpage from a web server	
Entering a username and password to access their bank account	
Downloading a text document from a web server	
Checking for new emails in their inbox	

[4]

ii. Some protocols have layers.

Give **two** reasons why protocols have layers.

1

2

[2]

(b). The student's computer is part of their home Local Area Network (LAN). The LAN currently only has wired connections.

- i. One characteristic of a LAN is that they are set up over a small geographical area.

Give **one** other characteristic of a LAN.

[1]

- ii. Describe the benefits of the student changing their home LAN to include wireless connections.

[4]

- iii. State **two** drawbacks of changing their home LAN to include wireless connections.

1

2

[2]

3. The artist uploads images to be displayed on a website. This is a client-server relationship.

- i. Identify the computer that is acting as the client in this scenario **and** justify your choice.

Client computer

Justification

[3]

- ii. Identify the computer that is acting as the server in this scenario **and** justify your choice

Server
computer

Justification

.....[3]

4(a). A library has a LAN (Local Area Network).

A LAN allows access by both wired and wireless devices.

Users have reported that the network sometimes runs very slowly.

- i. Explain why the number of devices using the network at the same time can affect the performance of the network.

.....[3]

- ii. Identify **one** other factor that can affect the performance of the network.

.....[1]

(b). Users can access websites from library computers.

Complete the description of accessing websites using the given list of terms. Not all terms will be used.

0	1	127	128	255	256	Colon
Domain Name Server			Embedded systems		File server	Full stop
Hyphen	Internet protocol		MAC address		Router	
Uniform Resource Locator		Web server		Clients		

A website is hosted on aThe computers that access the websites are called

The user enters the into a web browser, The web browser sends a request to the for the matching IP (Internet Protocol) address, If found the IP address is returned. A request is then sent to this IP address.

An IPv4 address is made of 4 groups of digits, Each group can be between the denary values and The groups of digits are separated by a

[7]

(c). Ethernet is considered a standard.

Explain why Ethernet is a standard.

[2]

(d). A network has several routers.

identify **three** tasks carried out by a router.

1

2

3

[3]

(e). A library does not use encryption when data is transmitted through its network.

Give **two** reasons why the library should use encryption.

1 _____

2 _____

[2]

(f). Protocols are used to transmit data through the network and over the internet.

Identify **one** protocol that can be used to perform each of the following tasks:

Send an email _____

Access a website securely _____

[2]

5(a). Amir has a home network that includes two laptop computers, four mobile phones, and two televisions.

Identify the type of network Amir has at home.

[1]

(b). The network uses a star topology with a central switch. The switch has an integrated wireless access point (WAP).

- i. Describe the similarities and differences between a switch and a router.

Similarities _____

Differences _____

[6]

- [3]**

[3]

- [3]**

7(a). The owners of a large bakery have a Local Area Network (LAN) with a star topology. They order their supplies over the Internet. When data is transmitted from the bakery to the supplier, network protocols are used.

Define what is meant by a 'network protocol'.

.....
[1]

(b). TCP/IP is a set of protocols based on layers.

- i. With regards to network protocols, define what is meant by a 'layer'.

.....
[1]

- ii. Describe **one** advantage of using layers to construct network protocols.

.....
[2]

(c). Give **two** reasons why the bakery may use a star network topology for their LAN.

1

2

.....
[2]

8(a). A law company currently use a Local Area Network (LAN) linked to a Wide Area Network (WAN). They want to upgrade their system to utilise cloud storage.

Define what is meant by a Wide Area Network.

.....
[1]

(b). Explain **two** advantages to the law company of storing their data in the Cloud.

1

2

[4]

(c). Explain **two** disadvantages to the law company of storing their data in the Cloud.

1

2

[4]**END OF QUESTION PAPER**