



9.2 Networking

Name: _____

Class: _____

Date: _____

Time: **408 minutes**

Marks: **290 marks**

Comments:

Q1.

Employees at a bank use client computers to access data that is stored on a database server.

The database server uses software to query and modify data stored in a database on hard disk drives. It returns the results of these queries to the clients over the bank's computer network.

The performance of the system is unsatisfactory: the time-delay between a client sending a query to the server and the client receiving the results is unacceptably long.

Explain how the performance of the system might be improved. You should consider the following factors that might be affecting the performance:

- the hardware of the server
- the design of the computer network
- the database and software running on the server.

In your answer you will be assessed on your ability to follow a line of reasoning to produce a coherent, relevant and structured response.

(Total 12 marks)

Q2.

A family uses a wireless computer network at home.

Describe **two** security measures that the family should put in place to ensure that the wireless access point is secure **and** explain how these security measures will make wireless connections to the access point more secure.

Measure 1: _____

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Measure 2: _____

(Total 2 marks)

Q3.

A network uses the CSMA / CA access method with Request to Send / Clear to Send (RTS / CTS).

A computer on the network has data to send to another computer. Explain how the CSMA / CA access method with RTS / CTS will be used during this transmission.

(Total 2 marks)

Q6.

Explain the differences between client-server and peer-to-peer networking.



Q7.

A systems analyst is planning a system for the administration of student courses to be used in an office in a college. The system must allow users at ten workstations to access and update a central database.

- (a) The analyst initially plans to use either a server-based or a peer-to-peer network.

Explain why a server-based network is likely to be more appropriate than a peer-to-peer network in this situation.

(2)

- (b) After considering other alternatives, the analyst finally decides to use a thin-client network.

Explain how a thin-client network works and how the use of a thin-client network instead of a traditional rich-client (thick-client) network will affect the selection of the hardware to be used by the system.



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(6)

- (c) The system will be networked within the college. This network will then be connected to the Internet so that staff who are away from the college can log in and access the system. This connection has to use a gateway.

Why must the college use a gateway instead of a router to connect their network to the Internet?

(1)

Q8.

Rich client (thick client), thin client and Software as a Service (SaaS) are three methods that can be used to make software applications available to the users of computers that are connected to a network.

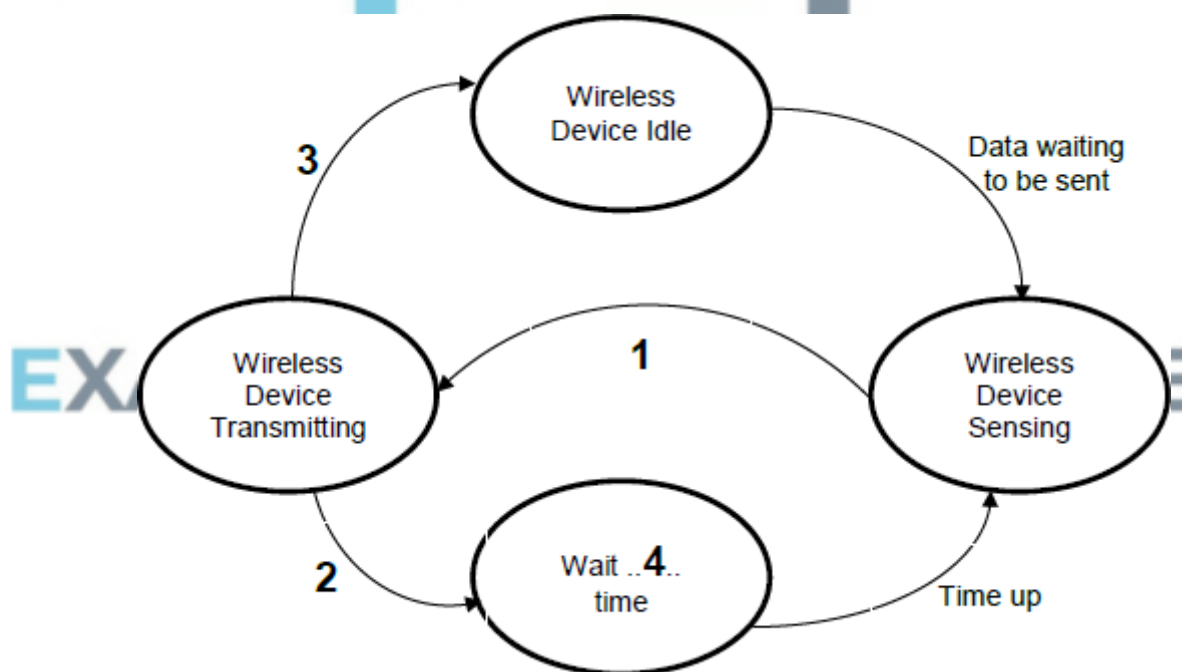
- Explain how rich client and thin client systems work.
- Describe the different hardware requirements of rich client and thin client systems.
- Explain why Software as a Service can be considered to be a special type of thin client system, and what distinguishes it from other types of thin client systems.

In your answer you will be assessed on your ability to use good English, and to organise your answer clearly in complete sentences, using specialist vocabulary where appropriate.

(Total 8 marks)**Q9.**

Wireless networks make use of the carrier sense multiple access and collision avoidance (CSMA / CA) method when accessing a wireless network to transmit data.

The diagram below shows a simplified state transition diagram of the CSMA / CA wireless network access method without use of request to send / clear to send (RTS / CTS).



- (a) Complete the table by writing in the descriptions that should appear at positions **1** to **4** in the above diagram.

Label	Description
1	
2	
3	

4	
---	--

(4)

- (b) Explain the role of a service set identifier (SSID) in wireless networking and why some network administrators turn off SSID broadcasting.

(3)

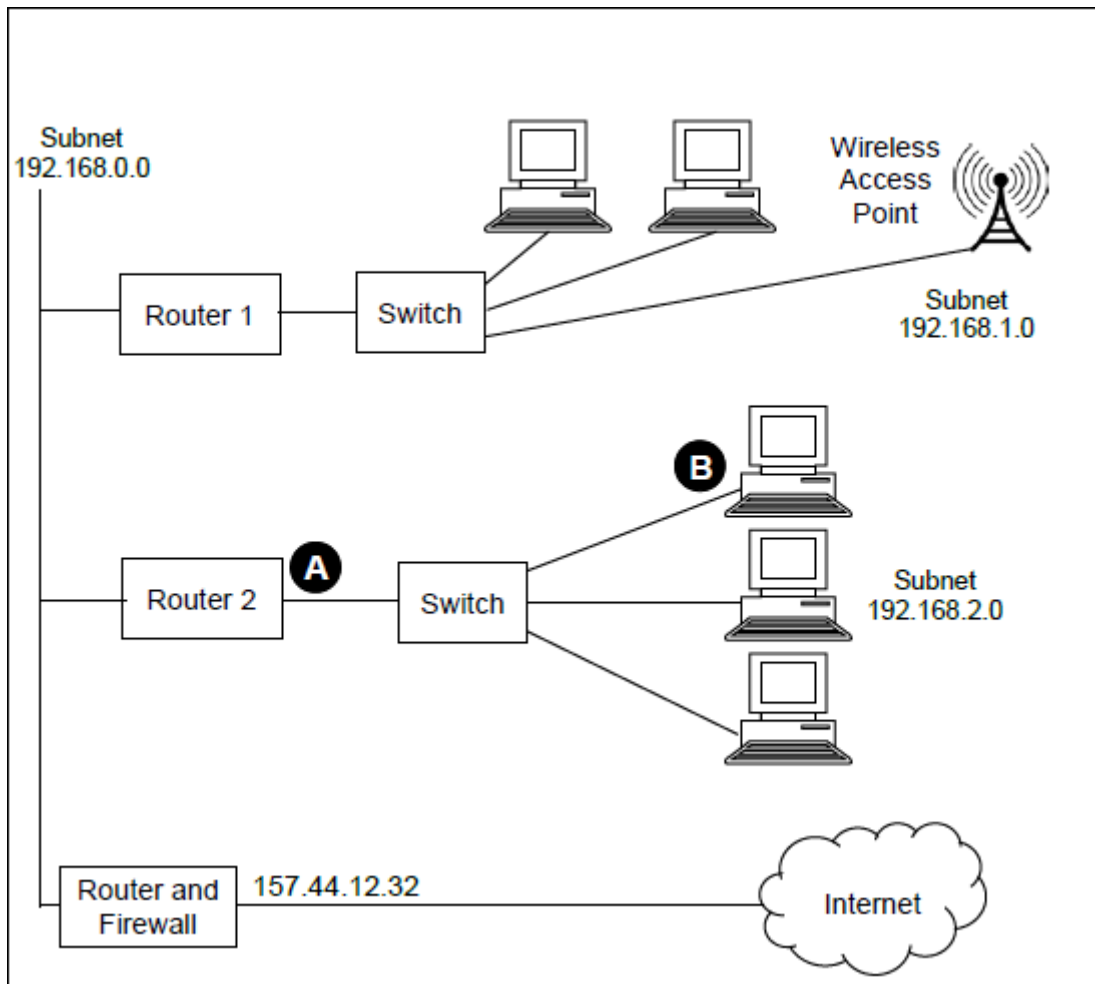
- (c) Explain why browsing the Internet might be slower at a public hotspot in a coffee shop than at home on a wireless network.

(2)

(Total 9 marks)

Q10.

The diagram below shows the physical topology of a local area network (LAN) and its connection to the Internet. The LAN uses the IPv4 protocol.



- (a) State suitable IP addresses for:

The 'Router 2' port labelled **A** : _____

The computer network interface card labelled **B** : _____

(2)

- (b) State **one** advantage of the star topology over the bus topology, and explain how this is achieved.

(2)

- (c) Laptop computers connect to the network using WiFi. They use carrier sense multiple access with collision avoidance (CSMA / CA) to determine when to transmit data.

Describe how the CSMA / CA method is used.

(6)

- Explain how the checksum is used for error detection.

(3)

Q11.

A student is configuring the Local Area Network (LAN) at her home.

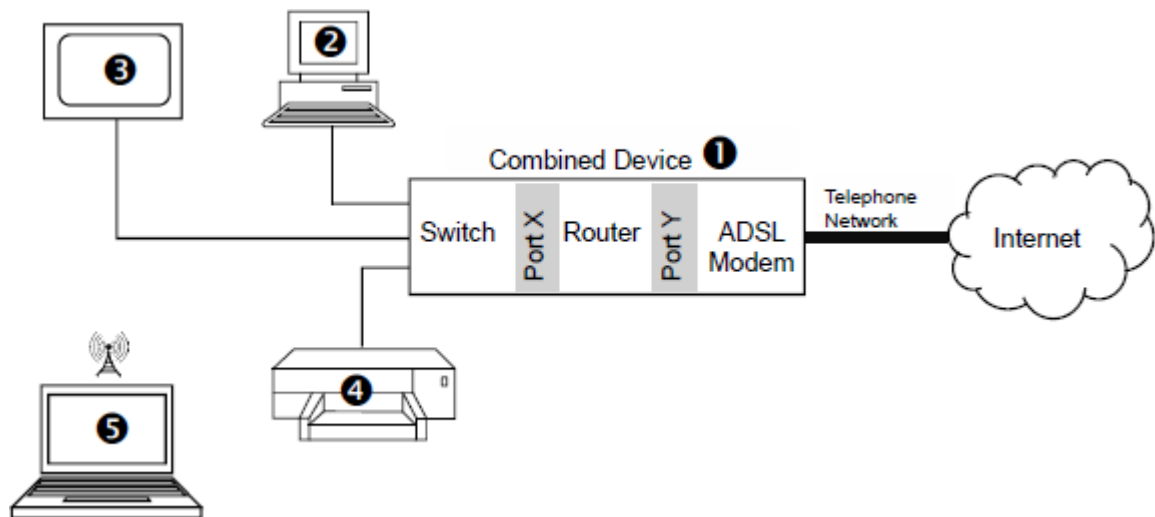
The following five hardware devices are connected to the network:

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- ③ a smart TV that is connected to the network by cable
- ④ a printer that is connected to the network by cable
- ⑤ a laptop computer that can connect to the network wirelessly.

The diagram below shows the physical topology of the LAN and its connection to the Internet.

Some, but not all, of the components of the Combined Device are shown.



- **Port Y** of the router in the Combined Device has the IP address 82.73.12.9.
- The network adapter card in the desktop computer has been allocated the IP address 192.168.0.2.
- The subnet mask 255.255.255.0 has been programmed into devices ② to ⑤

- (a) **Port X** is the router port, within the Combined Device, that allows devices on the LAN to access the Internet. Suggest a suitable IP address that could be allocated to **Port X** of the Combined Device.

_____ (1)

- (b) What physical network topology has been used for the LAN?

_____ (1)

- (c) The IP addresses allocated to the devices on the LAN are non-routable IP addresses.
The IP address allocated to **Port Y** of the combined device is a routable IP address.

Explain why the devices connected to a LAN are usually given non-routable IP addresses.

(2)

- (d) The desktop computer is uploading a file to an FTP server on the Internet.

The FTP server has IP address 67.84.23.102

Explain how the desktop computer will use the subnet mask (255.255.255.0), that it has been programmed with, to determine that the data being sent to the FTP server must be sent to the combined device from where it will be transferred on to the Internet.

(3)

- (e) The combined device contains a firewall.

Describe how the firewall might control the data that flow between the LAN and the Internet.

(3)

- (f) The ADSL connection to the Internet is broadband and the cabled connections within the LAN are baseband.

Explain the difference between a broadband connection and a baseband connection.

(1)

- (g) The smart TV is capable of being connected to the network wirelessly or using a cabled connection.

Explain why a cabled connection has been used.

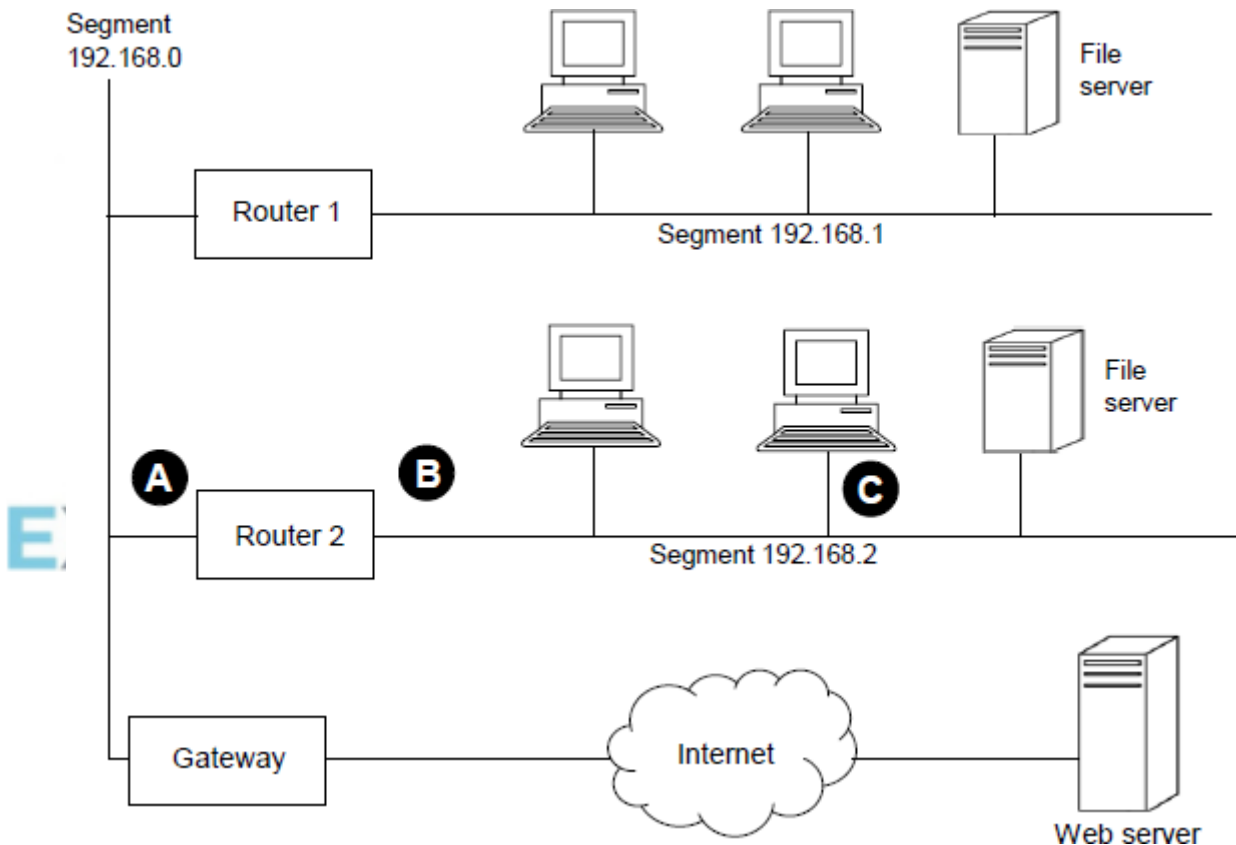
(1)

(Total 12 marks)

Q12.

A company operates a Local Area Network (LAN) which is used by its employees.

The diagram below shows the topology of the LAN.



- (a) Suggest suitable IP addresses for:

(i) the 'Router 2' port labelled A _____

(1)

(ii) the 'Router 2' port labelled B _____

(1)

(iii) the network adapter card in the computer labelled C _____

(1)

- (b) The network has been divided into segments.

Explain why networks that use a bus topology are often segmented.

(2)

- (c) Previously, employees of the company used word processing and spreadsheet software that was installed locally on each of the individual computers on the network. Now, employees use software with similar features as a service (SaaS). The software runs on a web server and is accessed through the Internet.

- (i) Explain **two** advantages of using software as a service instead of using software installed locally on individual computers.

Advantage 1

Advantage 2

(2)

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- (ii) Explain **one** disadvantage of using software as a service instead of using software installed locally on individual computers.

(1)

- (d) One difference between a Local Area Network (LAN) and a Wide Area Network (WAN) is the area that they cover. Describe **two** other differences between a LAN and a WAN.

Difference 1

Difference 2

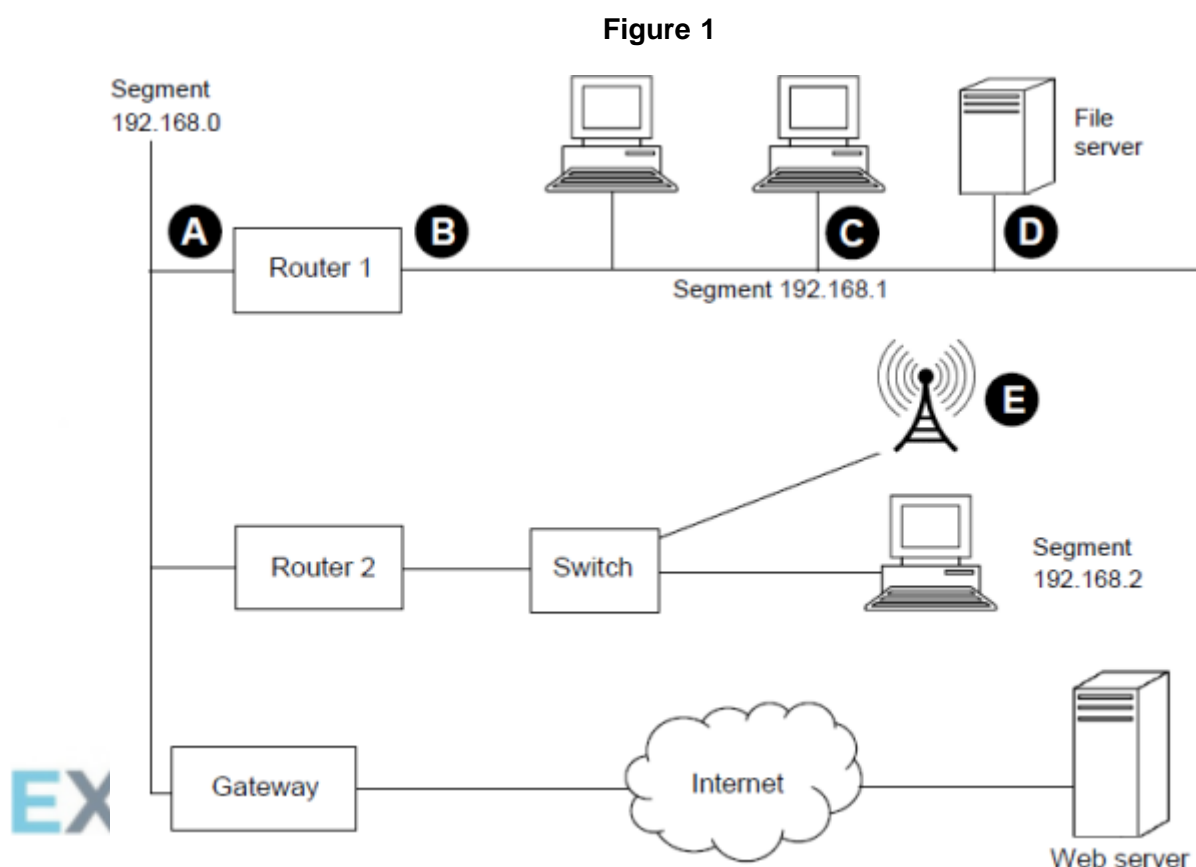
(2)

Q13.

A student is using her computer at school.

Figure 1 shows the physical topology of the Local Area Network (LAN) to which her computer is connected. The LAN is divided up into segments. It also shows a web server that her computer connects to through the Internet.

The student is using computer **C**.



(a) Suggest suitable IP addresses for:

- (i) the "Router 1" port labelled **A** _____
- (ii) the "Router 1" port labelled **B** _____
- (iii) the network adapter card in the student's computer, labelled **C** _____

(3)

(b) What physical network topology is used within segment 192.168.1?

(1)

- (c) When the computers in segment 192.168.1 were configured on the network, they were programmed with a subnet mask.

What subnet mask would have been used?

(1)

- (d) The student has been accessing data from the file server computer that is labelled **D** on **Figure 1**. This file server uses a server operating system.

Explain what a *server operating system* is.

(1)

- (e) Some other students using laptops are connected to the LAN by Wi-Fi through the Wireless Access Point that is labelled **E** on **Figure 1**. Wireless communication is less secure than communication using cables.

- (i) Describe **one** measure that could be implemented by the Wireless Access Point to improve the security of the network.

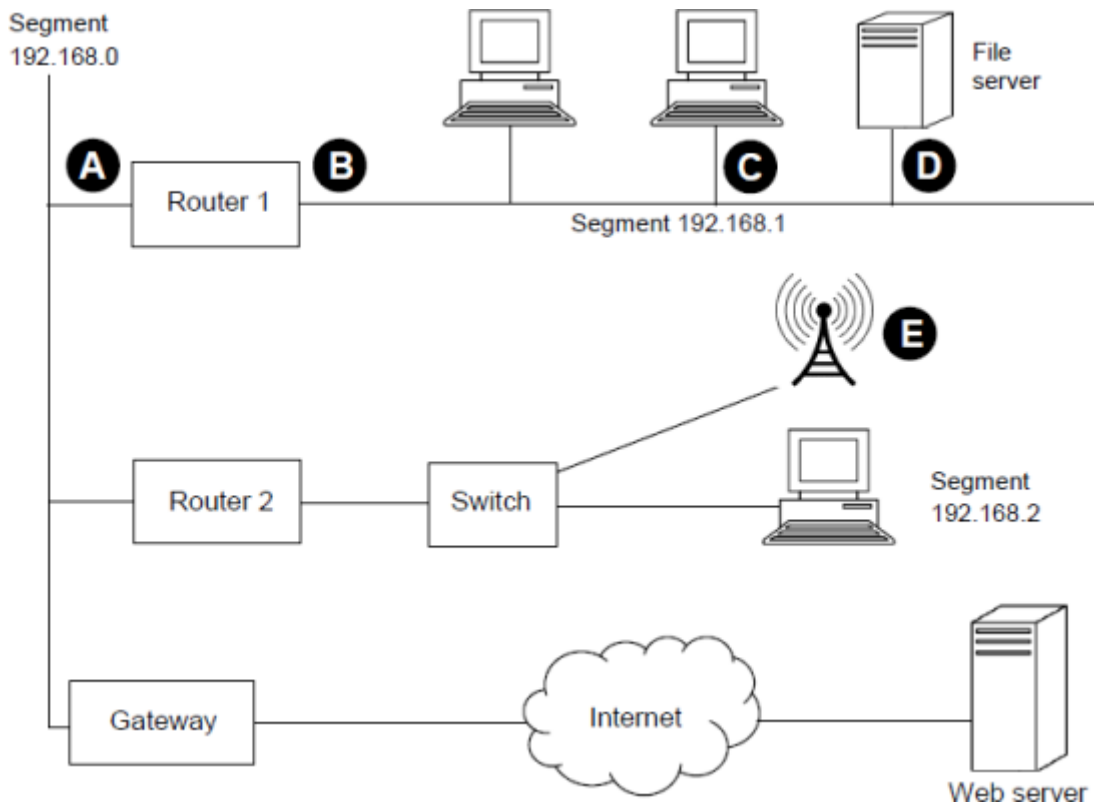
(1)

- (ii) Explain why Wi-Fi has been chosen for this connection rather than Bluetooth.

(1)

Figure 1 is repeated below so that you can answer question part **(f)** without having to turn back in the question paper booklet.

Figure 1(repeated)



The student now uploads a file from her computer to a web server over the Internet.

- (f) Write a detailed description of how one packet of data that the student is uploading to the web server will be routed from her computer in the United Kingdom to the web server that is located in Chicago in the United States of America. You may assume that the web browser software on the student's computer has already looked up, using a domain name server, the IP address of the web server.

Your description should cover:

- how the packet will be routed within the LAN from the student's computer to the gateway **and**
- how, once it has reached the gateway, the packet will be routed across the Internet to the web server that the data is being uploaded to.

In your answer you will be assessed on your ability to use good English, and to organise your answer clearly in complete sentences, using specialist vocabulary where appropriate.

(8)

- (g) The web server has a routable IP address.

The student's computer has a non-routable IP address.

Explain **two** differences between routable and non-routable IP addresses.

Difference 1: _____

Difference 2: _____

(2)
(Total 18 marks)

Q14.

- (a) Explain the differences between the World Wide Web and the Internet.

(4)

- (b) Major parts of the Internet run on a packet switched network.

What is meant by the term *packet switching*?

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(2)

- (c) A packet being sent across the Internet may contain the details of a socket, for example 12.23.45.89:80.

Complete the table below to explain what each part of the socket in the table represents.

Part	Represents
12.23.45.89	
80	

(2)

(Total 8 marks)

Q15.

A systems analyst is planning a system for the administration of student courses to be used in an office in a college. The system must allow users at ten workstations to access and update a central database.

- (a) The analyst initially plans to use either a peer-to-peer or a server-based network.

Explain why a server-based network is likely to be more appropriate than a peer-to-peer network in this situation.

(2)

- (b) After considering other alternatives, the analyst finally decides to use a thin-client network.

Explain how a thin-client network works and how the use of a thin-client network instead of a traditional rich-client (thick-client) network will affect the selection of the hardware to be used by the system.

In your answer you will be assessed on your ability to use good English, and to organise your answer clearly in complete sentences, using specialist vocabulary where appropriate.

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(4)

- (c) The system will be networked within the college. This network will then be connected to the Internet so that staff who are out of the college can log in and access the system.
This connection will use a gateway.

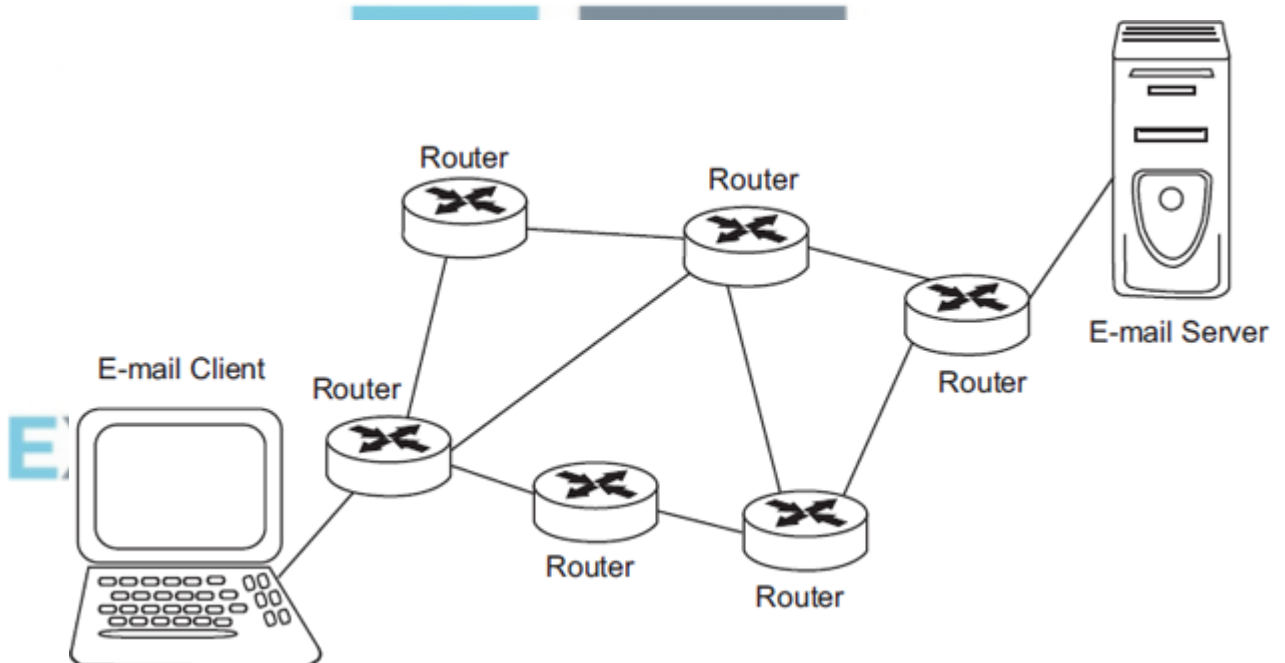
What is the purpose of the gateway?

(1)

(Total 7 marks)

Q16.

The diagram below is a partial view of a router network connecting an e-mail client to an e-mail server.



- (a) Describe **two** roles of the routers shown in the diagram above.

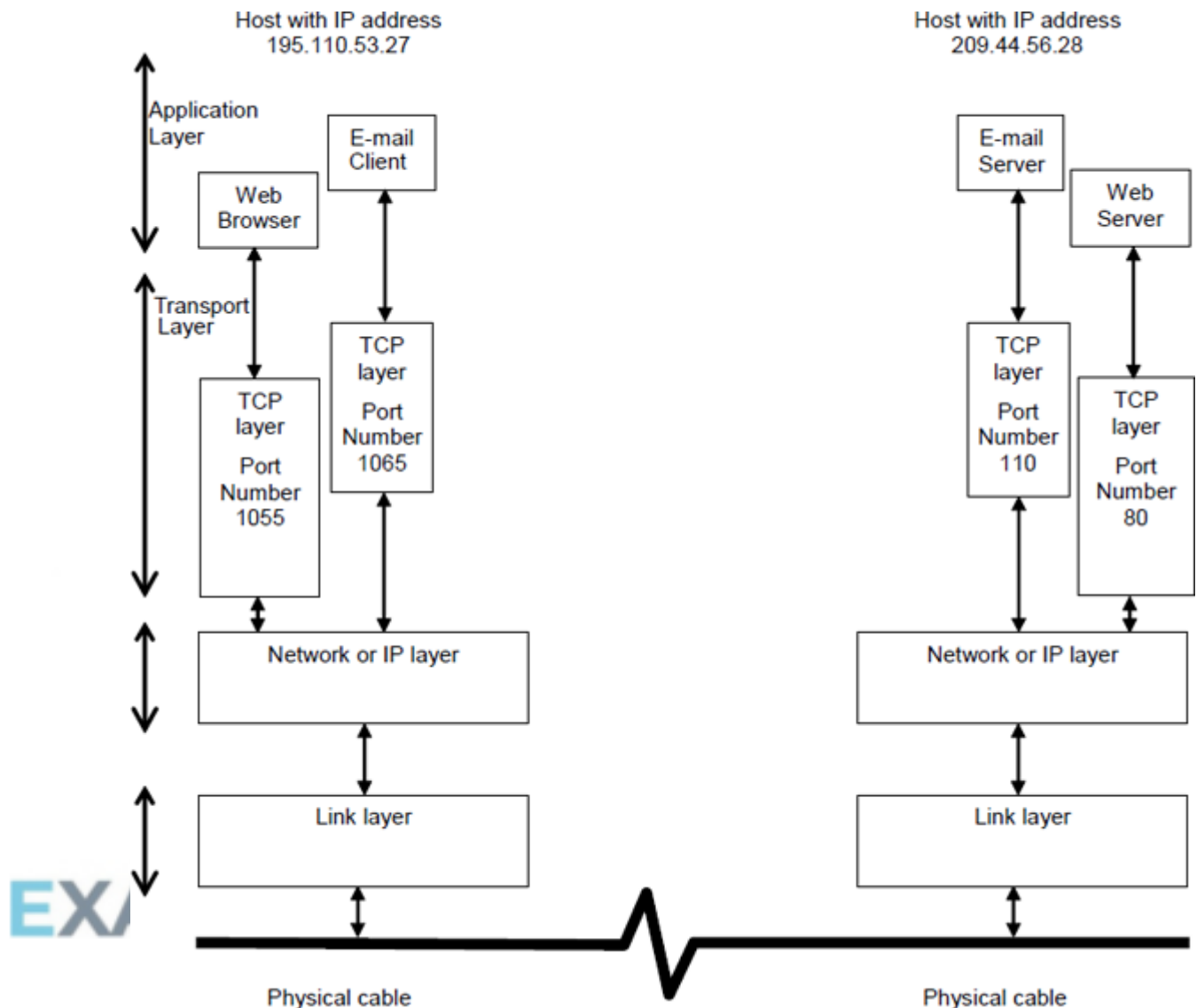
Role 1: _____

Role 2: _____

(2)

- (b) Name **one** of the application protocols associated with e-mail.

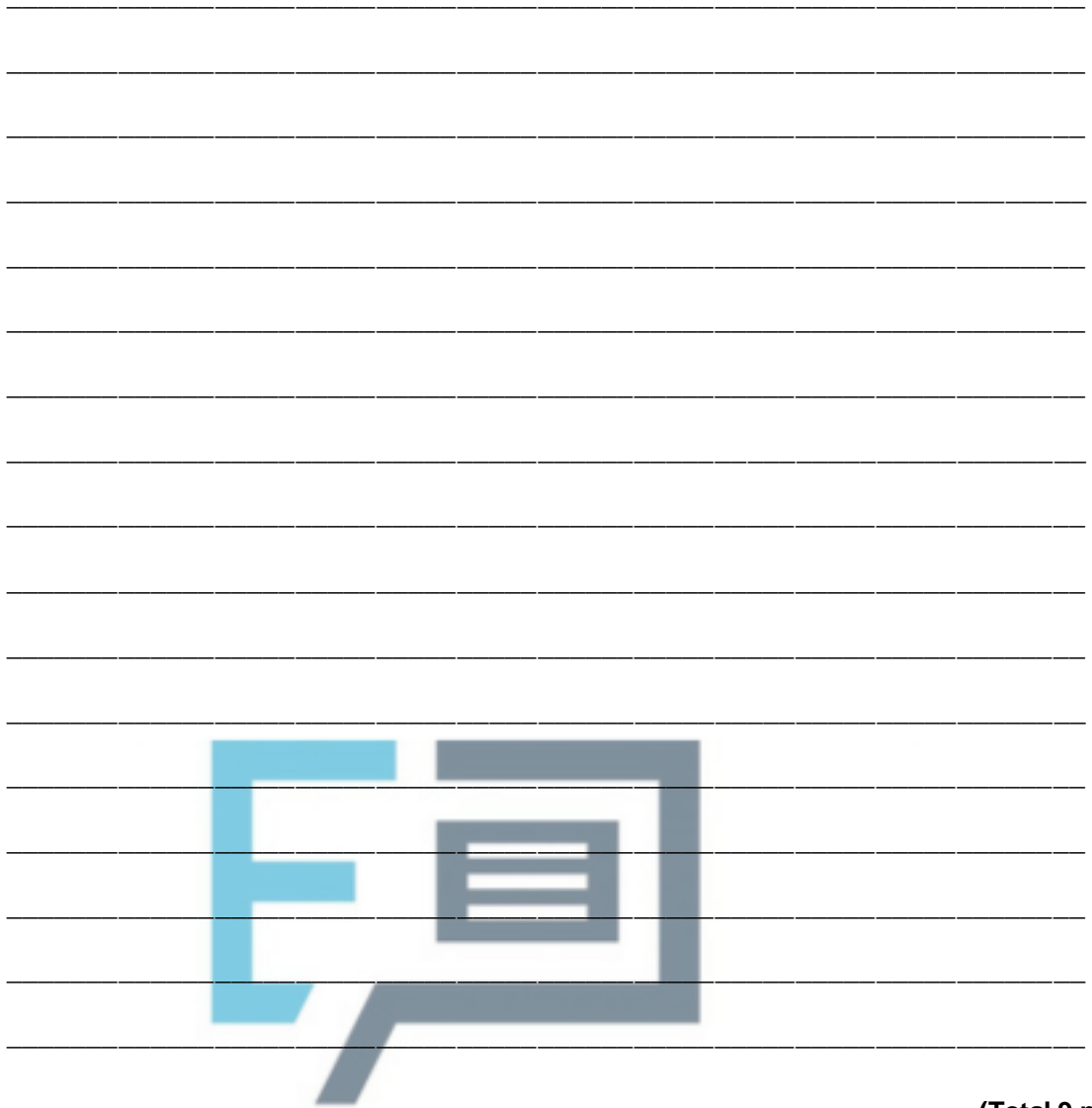
- (c) The diagram below shows the TCP/IP stack for two computers (hosts) connected via a network.



Explain how the TCP/IP stack in each host supports an e-mail client to e-mail server request at the same time as a web browser to web server request. You should cover in your explanation:

- the steps from the initiation of a request to the receipt of a response
- the role of the different TCP/IP layers in the stages of client-server operation
- the use of packets.

In your answer you will be assessed on your ability to use good English and to organise your answer clearly in complete sentences, using specialist vocabulary where appropriate.



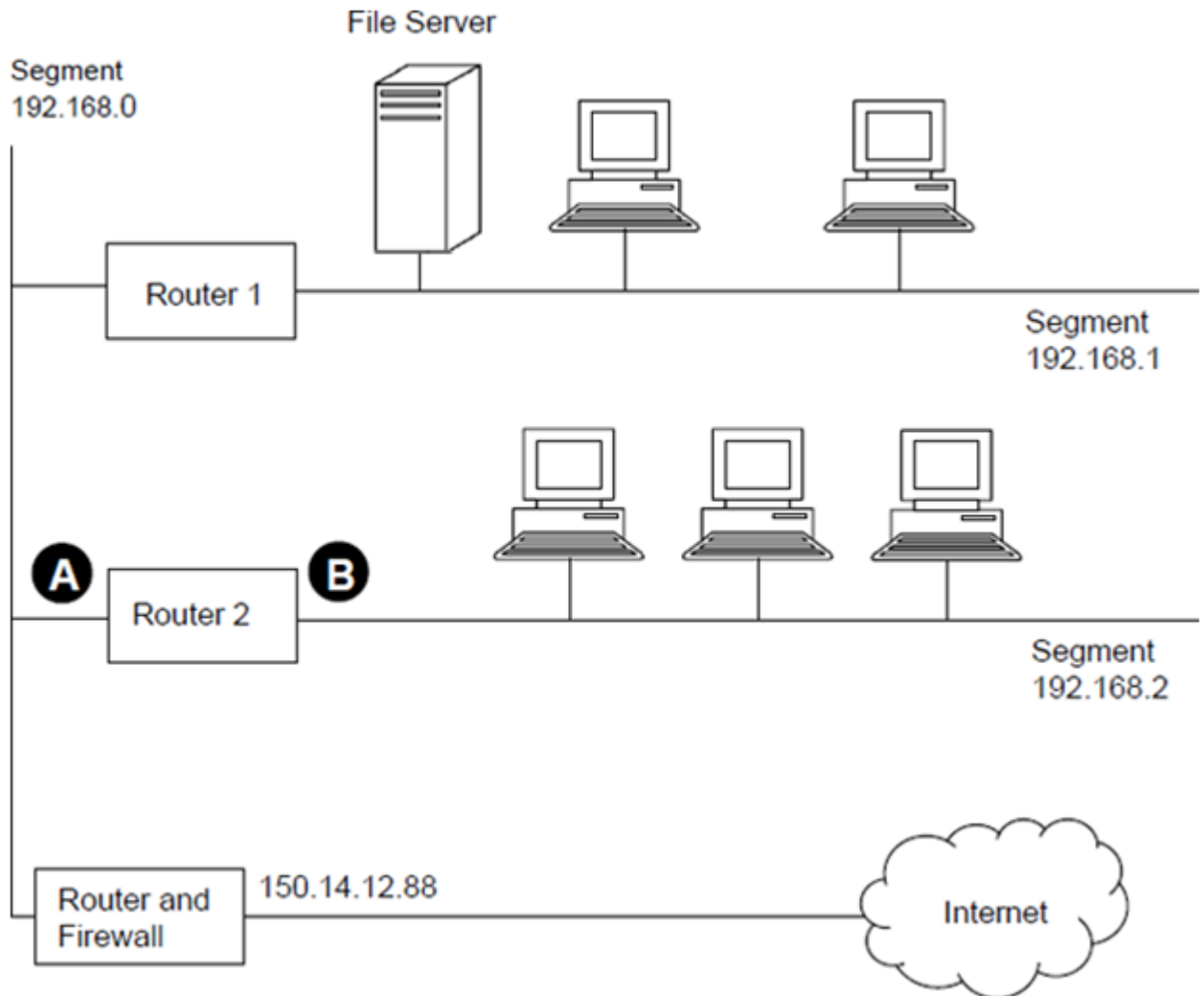
(6)

(Total 9 marks)

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Q17.

The figure below shows the topology of a particular computer Local Area Network (LAN) that is divided up into segments.



- (a) Suggest suitable IP addresses for:

(i) the Router 2 port labelled **A** : _____

(ii) the Router 2 port labelled **B** : _____

(2)

- (b) When the computers in segment 192.168.2 were configured on the LAN, they were programmed with a subnet mask.

What subnet mask should have been used?

(1)

- (c) The LAN has a bus topology and has been divided into segments.


Explain why the LAN has been segmented.

(2)

- (d) Alternatively, the LAN could have been constructed using a star topology.
- (i) State **one** advantage of using a bus topology and explain how the advantage is achieved.

(1)

- (ii) State **one** advantage of using a star topology and explain how the advantage is achieved.



(1)

- (e) Discuss the security threats that the network manager will need to deal with because the LAN is connected to the Internet, together with how these may be dealt with.

In your answer you will also be assessed on your ability to use good English, and to organise your answer clearly and coherently in complete sentences, using specialist vocabulary where appropriate.

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[illegible]

(6)
(Total 13 marks)

A home desktop computer is connected to a number of peripherals including a printer and a keyboard. It is also connected to the Internet and to a wired Local Area Network (LAN).

- Explain what is meant by *baud rate*.

(1)

- (i) Explain how it is possible for the number of bits transmitted per second to be higher than the baud rate.

(1)

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Step	Direction	Data / Request Sent
1	Computer → Printer	Is printer ready to receive data?
2	Computer ← Printer	
3	Computer → Printer	
4	Computer ← Printer	Printer receiving data
5	Computer → Printer	Sending has ended
6	Computer ← Printer	

(3)

- (c) The computer is connected to a small LAN using a wired baseband connection and to the Internet using a broadband connection.

Explain the difference between baseband and broadband connections and justify why the LAN connection is baseband whereas the Internet connection is broadband.

In your answer you will also be assessed on your ability to use good English, and to organise your answer clearly and coherently in complete sentences, using specialist vocabulary where appropriate.

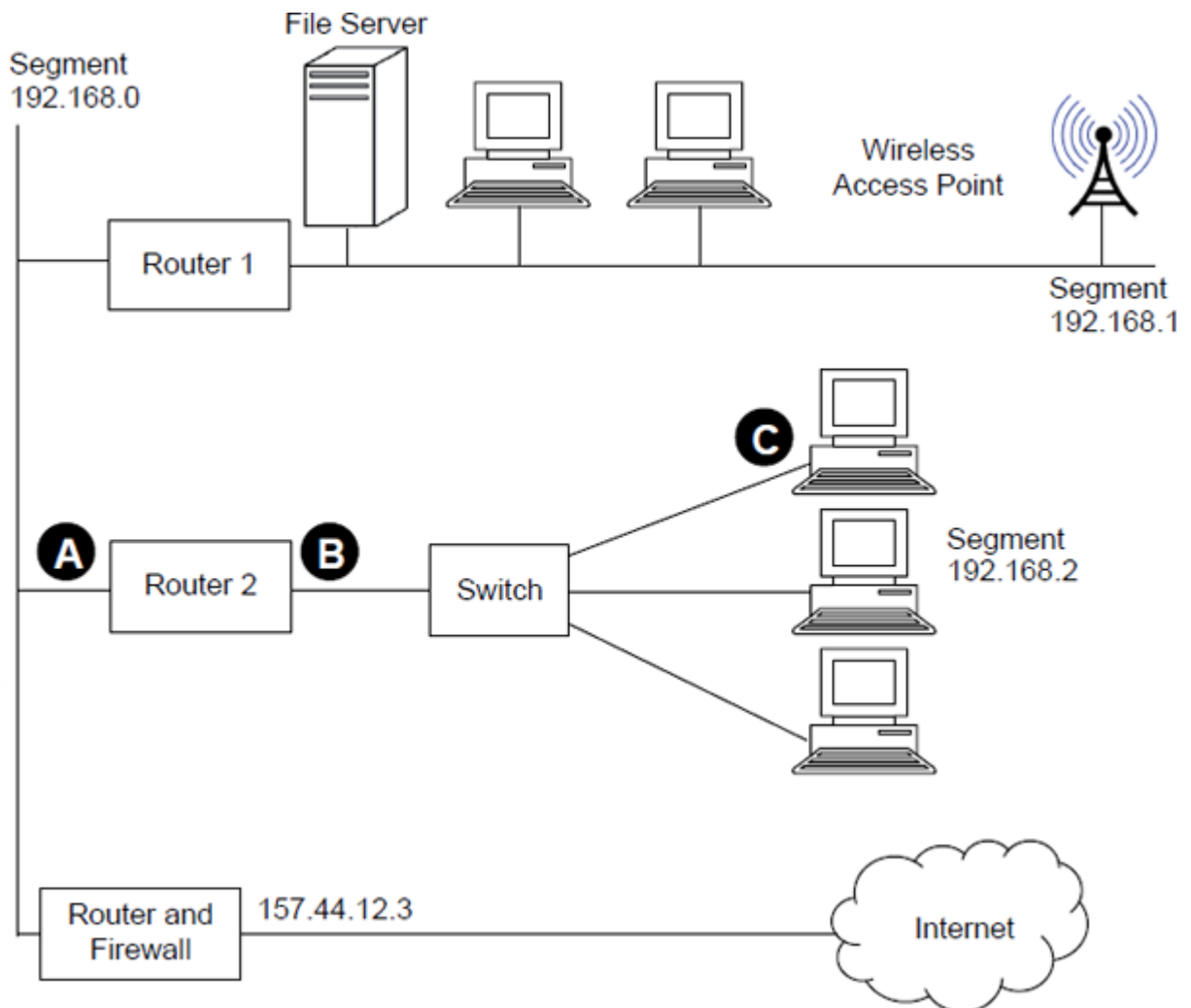
EXAM PAPERS PRACTICE

(4)

(Total 9 marks)

Q19.

The diagram below shows the topology of a particular computer network that is divided up into segments.



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(a) Suggest suitable IP addresses for:

- (i) the "Router 2" port labelled **A**: _____
- (ii) the "Router 2" port labelled **B**: _____
- (iii) the computer network interface card labelled **C**: _____

(3)

(b) What physical network topology is used within segment 192.168.2 to connect the computers to the switch?

(1)

(c) When the computers in segment 192.168.2 were configured on the network, they were programmed with a subnet mask.

What is the purpose of a subnet mask, and what would the subnet mask be in this case?

Purpose: _____

Subnet mask: _____

(2)

- (d) Laptop computers connect to the network wirelessly using Wi-Fi. Wireless communication is less secure than communication using cables.

Explain **two** measures that the Wireless Access Point could use to improve the security of the network.

Measure 1: _____

Measure 2: _____

(2)

- (e) The computers in segment 192.168.1 use Carrier Sense Multiple Access with Collision Detection (CSMA/CD) to determine when to transmit data.

Explain how the CSMA/CD method is used, including what happens in the event of a collision occurring.

In this question you will also be assessed on your ability to use good English and to organise your answer clearly in complete sentences, using specialist vocabulary where appropriate.

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(6)

(Total 14 marks)

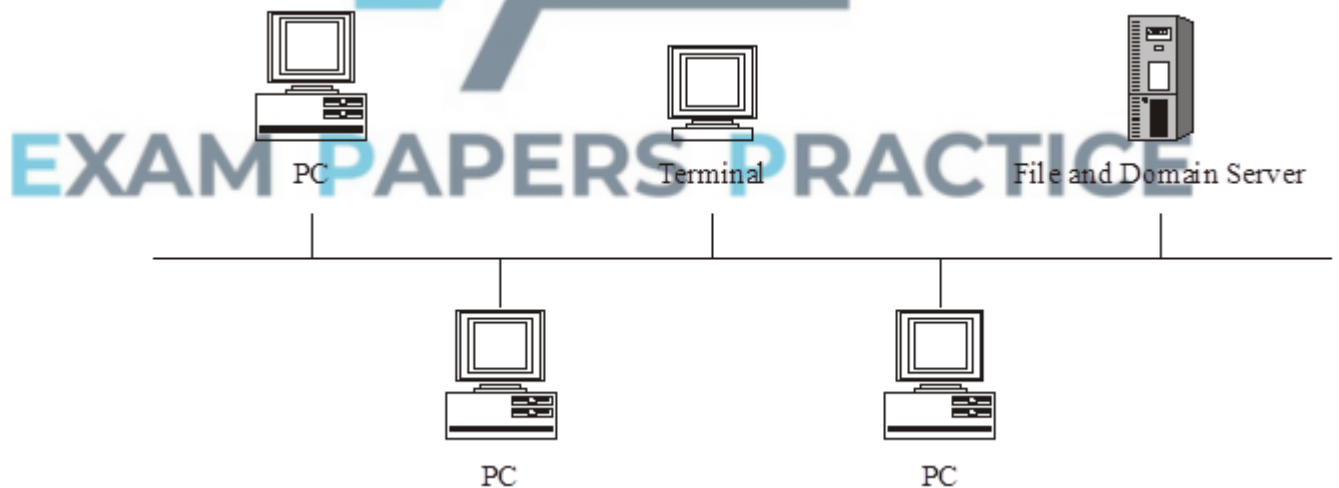
Q20.

A county has a number of local libraries in various towns. Books currently belong to each library and there is no system for the exchange of books between libraries.

Each library has a local area network (LAN) for lending and enquiries shown in the figure below.

- (a) (i) Describe what is meant by a local area network.

(2)



- (ii) What type of local area network topology is shown in the figure above?

(1)

- (iii) Does the network cable for this type of network use serial or parallel transmission of data?

(1)

- (iv) Name **one** other type of local area network topology.

(1)

- (v) Name **two** other devices which could be added to the network each of which would be a resource shared by users (administrators and/or borrowers) of the network.

1. _____

2. _____

(2)

- (b) There is currently an Internet connection from one of the PCs, and staff use this to contact a book supplier by keying the following into the address bar of the browser software.

<http://www.bargainbooks-r-us.co.uk/index.htm>

- (i) What is the **domain name** of the supplier?

(1)

- (ii) What is **index.htm**?

(1)

- (iii) Sometimes when the browser is used the software displays the error message 'Page Not Found'.

Give **one** possible reason for this, other than a misspelling of the URL.

(1)

- (c) The decision has been made to connect each library to a wide area network.

- (i) Explain what is meant by a wide area network (WAN).

(2)

- (ii) Describe **two** benefits of connecting all the libraries to a WAN. **One** should be a benefit for a library administrator and **one** a benefit for a borrower.

1 Administrator _____

2 Borrower

(2)

(Total 14 marks)

Q21.

A school has classrooms and offices in several buildings on a single site. Data held about the pupils is stored on a database and administered by a database administrator. The school now wants to connect all its office and classroom computers to share information and services and introduce an electronic registration system.

- (a) Which network type is most appropriate, wide area (WAN) or local area (LAN)? Justify your choice.

(2)

- (b) Explain **one** way in which the school network can benefit each of the following. Each must be different.

- (i) A pupil

(1)

- (ii) A teacher

(1)

- (iii) A head of year or personal tutor

(1)

- (iv) The head or principal of the school

(1)

- (c) The computers in each room are to be connected using an Ethernet-based hub. In

one of the buildings **three** offices are next to each other, each with five computers.
Draw a diagram of the physical topology of this network.

(3)

(d) When the network installation is complete, pupils and staff complain that the network is very slow during peak periods.

(i) It is suggested that the hubs should be replaced by switches. What is the difference between a switch and a hub?

(2)

(ii) Why does this improve the speed of the transmissions on the network?

(1)

(e) Why is a firewall needed if the school wants to connect to the Internet?

(2)

(Total 14 marks)

Q22.

A firm of solicitors is based in a city centre office occupying **two** floors. The firm has 15 stand-alone PCs.

The majority of the work involves the word processing of customer documents and contracts. One PC has a connection to the Internet and is used for access to various professional bodies' web sites and the on-line ordering of goods.

The decision has been taken to network the existing PCs.

(a) Give **two** reasons why each PC will need a network adapter card.

1. _____

2. _____

(2)

(b) Describe **three** benefits which the network will bring to the company.

1. _____

2. _____

3. _____

(3)

(Total 5 marks)

Q23.

A small organisation, Acme Consultants, with four stand-alone computers in an office, want to set up a peer-to-peer network in order to share the printer connected to one of the computers.

(a) What is peer-to-peer networking?

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(1)

(b) If an Ethernet switch is used to set up the network, draw a labelled diagram of the physical layout of the network.

(2)

(c) It is decided to set the IP addresses for each computer manually and use a subnet

mask of 255.255.255.0.

- (i) The following IP addresses were used for the computers:

Computer A: 192.168.5.2

Computer B: 192.168.5.3

Computer C: 192.168.4.4

Computer D: 192.168.5.5

Why is this not satisfactory?

(1)

- (ii) What should be the network ID of this network?

(1)

- (iii) What possible values could the host IDs take?

(1)

- (d) Acme Consultants now want to connect their network to the Internet using an ADSL line. A router is used to connect the network switch to the ADSL modem.

- (i) What is the purpose of the router?

(1)

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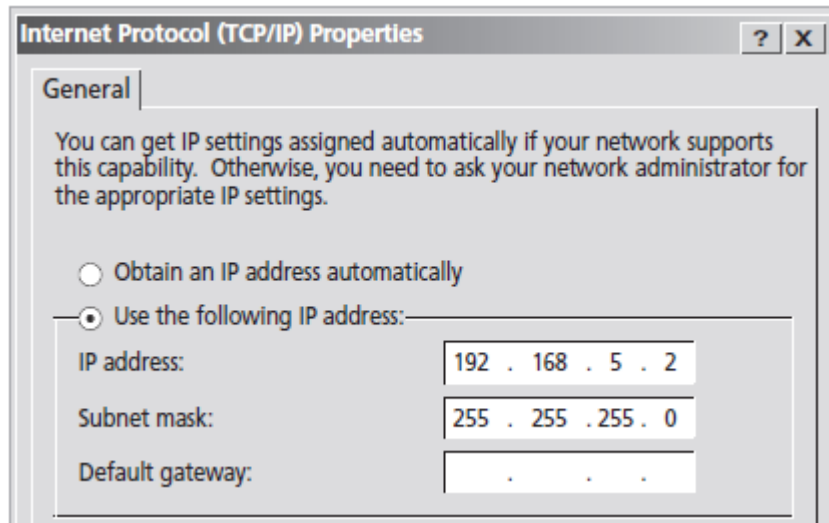
- (ii) The IP addresses 192.168.5.1 and 222.125.105.15 are assigned to the router.

Which of the IP addresses needs to be registered with the Internet registrar and why?

IP address: _____

Reason _____

(2)



- (iii) The diagram above shows part of the TCP/IP configuration window displayed on the monitor of computer A. What IP address should be entered for the Default gateway?

_____ (1)
(Total 10 marks)

Q24.

- (a) What is meant by **each** of the following?

- (i) Internet

_____ (1)

- (ii) World Wide Web

_____ (1)

- (iii) Local Area Network

_____ (1)

- (iv) Wide Area Network

_____ (1)

(v) Intranet

(1)

(b) Give an example of:

(i) a domain name;

(1)

(ii) an IP address.

(1)

(Total 7 marks)

Q25.

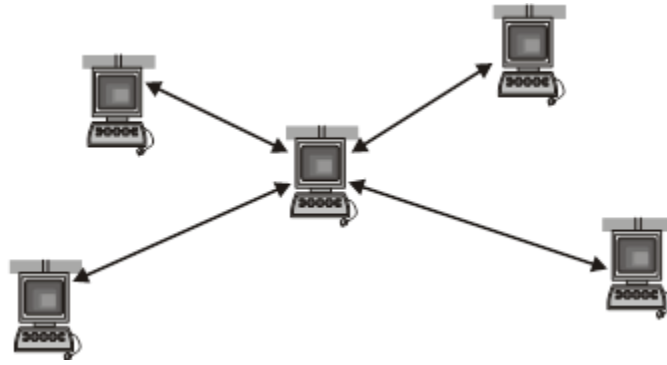
(a) A small organisation has several computers in an office physically wired together to form a local area network (LAN) as shown below.



What is the name of this network topology?

(1)

(b) The network could instead be physically wired together where the centrally located computer is a server as shown below.



What is the name of this network topology?

_____ (1)

- (c) (i) State **one** advantage of network (a) compared with network (b) above, and give a reason.

Advantage _____

Reason _____

_____ (2)

- (ii) State one advantage of network (b) compared with network (a) above, and give a reason.

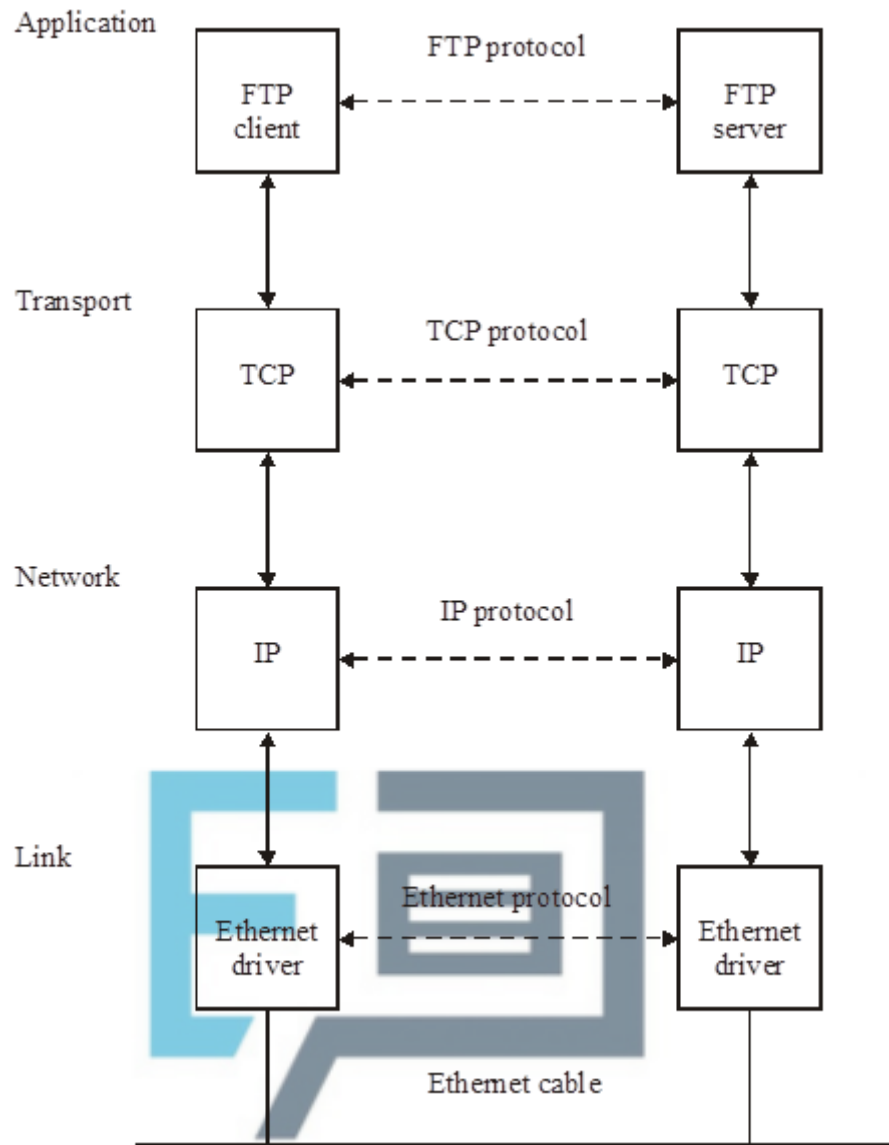
Advantage _____

Reason _____

EXAM PAPERS PRACTICE (Total 6 marks)

Q26.

The figure below shows the TCP/IP *protocol* stack applied to a LAN (Local Area Network).



(a) What is a protocol?

(1)

(b) What is the topology of this local area network?

(1)

(c) State a suitable type of network cable for the physical connections of this LAN.

(1)

The IP protocol layer uses IP addressing to route packets.

(d) Give **two** examples of an IP address that could belong to the same LAN.

1. _____

2. _____ (2)

(e) Which part of your IP addresses identifies

(i) the LAN;

(1)

(ii) the host on this LAN?

(1)

(f) The Ethernet protocol layer uses Ethernet MAC (Media Access Control) addressing to route Ethernet frames. What is an Ethernet MAC address?

(1)

(g) Describe **two** tasks performed by the TCP protocol layer
1. _____
2. _____

(2)

(h) Give **one** example of another type of application found in the Application layer.

(1)

EXAM PAPERS PRACTICE

(i) If two local area networks are connected through the Internet each must have a registered public IP address. Name the **type** of organisation responsible for recording the allocation of public IP addresses.

(1)

(1)
(Total 12 marks)

Q27.

(a) Two of the components of a computer system are a processor and main memory which are connected together by three buses. Name **each** of these buses and explain their purpose.
1. Name _____
Purpose _____

2. Name _____

Purpose _____

3. Name _____

Purpose _____

(6)

- (b) In order to connect the computer system to a local area network (LAN) an additional piece of hardware is required. Name this piece of hardware and explain its purpose.

Name _____

Purpose _____

(2)

- (c) A printer is connected to the computer system using parallel transmission. Give **one** reason why parallel transmission may be more appropriate than serial transmission.

(1)

- (d) Give **one** reason why serial transmission is more appropriate for the local area network.

EXAM PAPERS PRACTICE

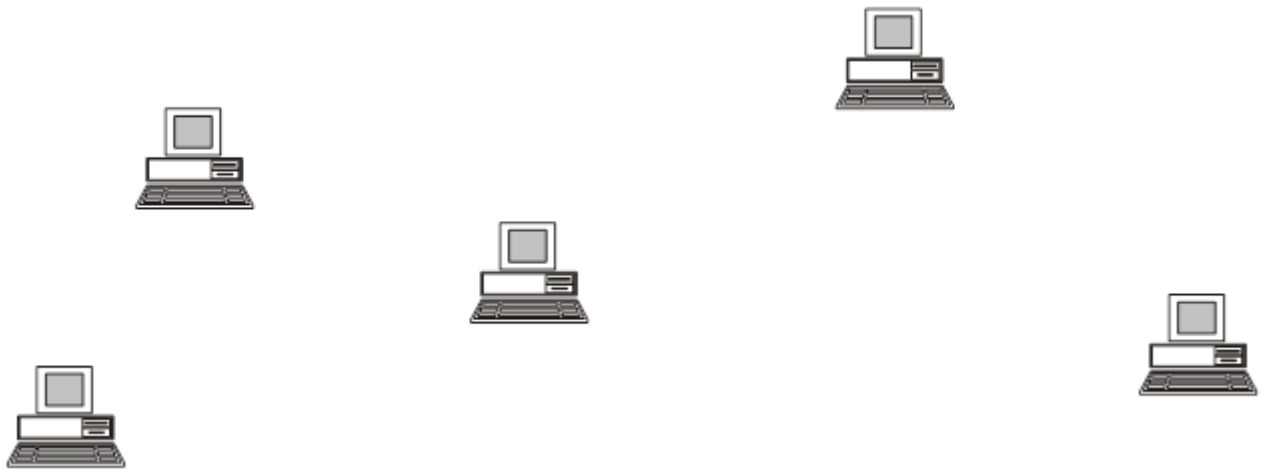
(1)

(Total 10 marks)

Q28.

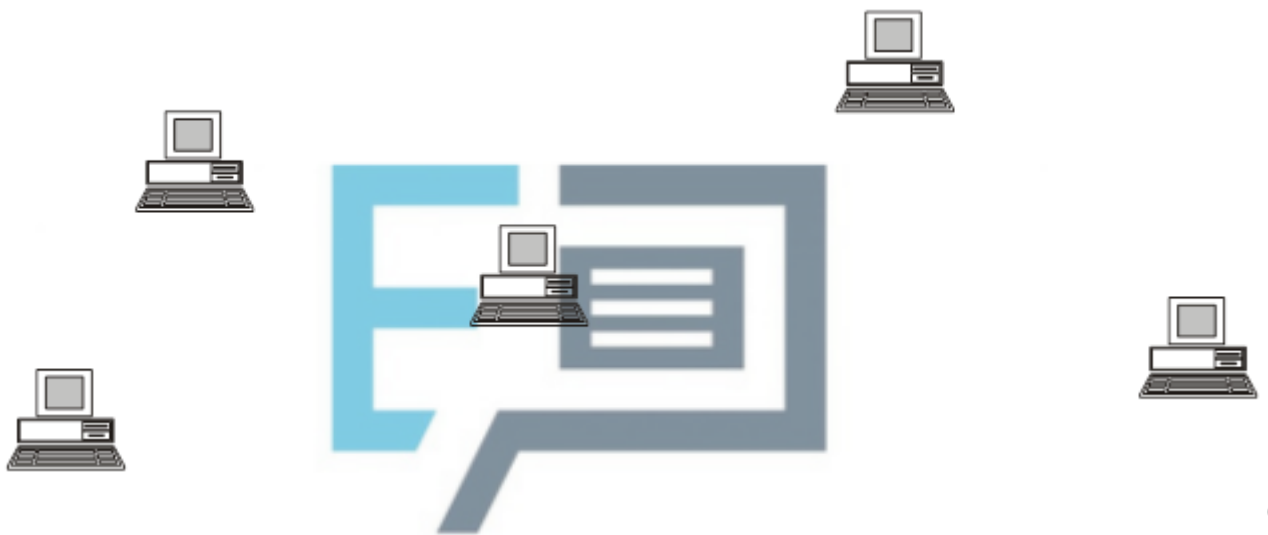
On the diagrams below draw the connections between the computers if the following Local Area Network (LAN) topologies are used. In **each** case show the direction of data transfer.

- (a) Star



(2)

(b) Bus



(2)

(Total 4 marks)

EXAM PAPERS PRACTICE

Q29.

The United Kingdom's National Health Service was created to provide health care to the nation through:

- hospitals
- health centres/GPs' (doctors') surgeries
- pharmacies (chemists).

The UK government is proposing to computerise and network the entire National Health Service (NHS) so that it will be possible to have on-line *access to the system at a level of security relevant to their status* for anyone who

- works for the NHS
- uses its services
- works at a branch of government responsible for the NHS.

Patient records will be stored in multi-user distributed relational databases managed by *Database Management Systems* (DBMS).

- Every person in the UK is assigned a unique numeric key, *the patient reference*

- number, and is assigned for primary health care to a doctor in a health centre or a GPs (General Practitioner's or doctor's) surgery located in a single building.
- A person's doctor may, if necessary, arrange for the person to see a specialist doctor in a hospital.
 - Drugs prescribed for a person by the person's GP for the treatment of an illness are obtained from a pharmacy.
 - Every computer in the service of the NHS will be interconnected in *local area networks* (LANS) and the *local area networks* will be interconnected by a *wide area network* (WAN).

Which network type is most appropriate, WAN or LAN, **within** a health centre or GPs (doctor's) surgery? Justify your choice.

(Total 2 marks)

Q30.

Figure 1 below shows part of the logical layout of an Ethernet-based local area network consisting of several desktop PCs connected using a bus topology. The network is split into two *segments* linked by a bridge.

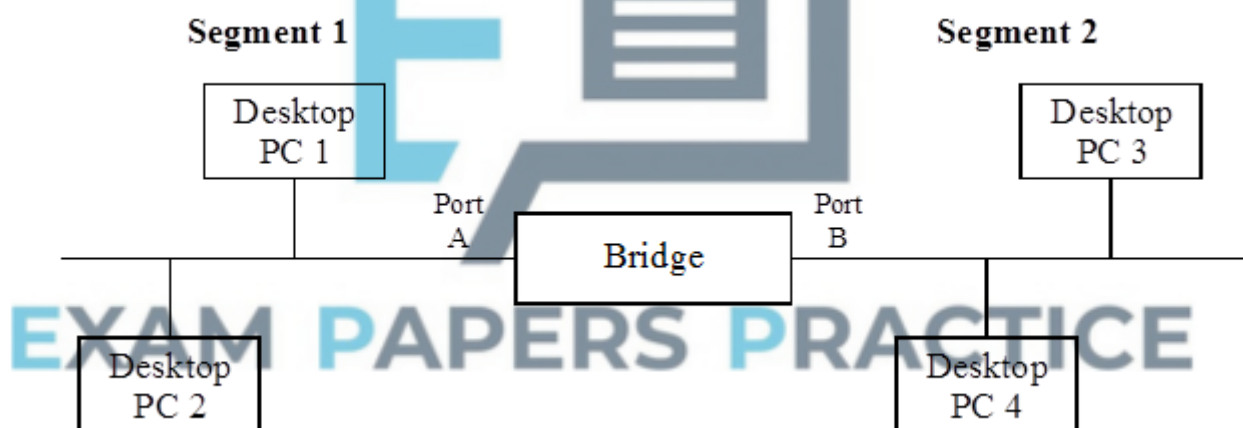


Figure 1

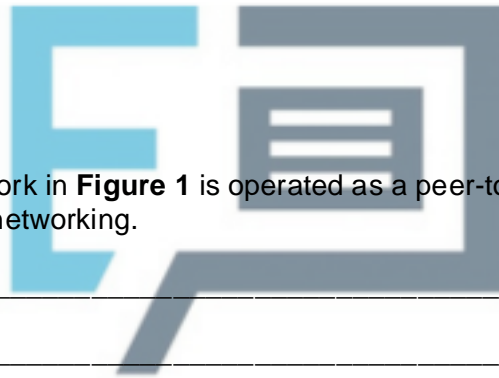
- (a) (i) Why is it necessary sometimes to split local area networks based on a bus topology into two or more segments?

(1)

- (ii) Describe the involvement of the bridge in **Figure 1** in traffic management on the Ethernet segments.

(2)

- (iii) The network in **Figure 1** is physically realised using two hubs, a bridge and twisted-pair **cabling** to interconnect the desktop PCs. Draw a labelled diagram of the layout of the network that uses these components.



(2)

- (iv) The network in **Figure 1** is operated as a peer-to-peer network. Explain peer-to-peer networking.

EXAM PAPERS PRACTICE

(1)

- (b) **Figure 2** below shows how three desktop PCs may share via an Ethernet switch and router an ADSL line connection to the Internet.

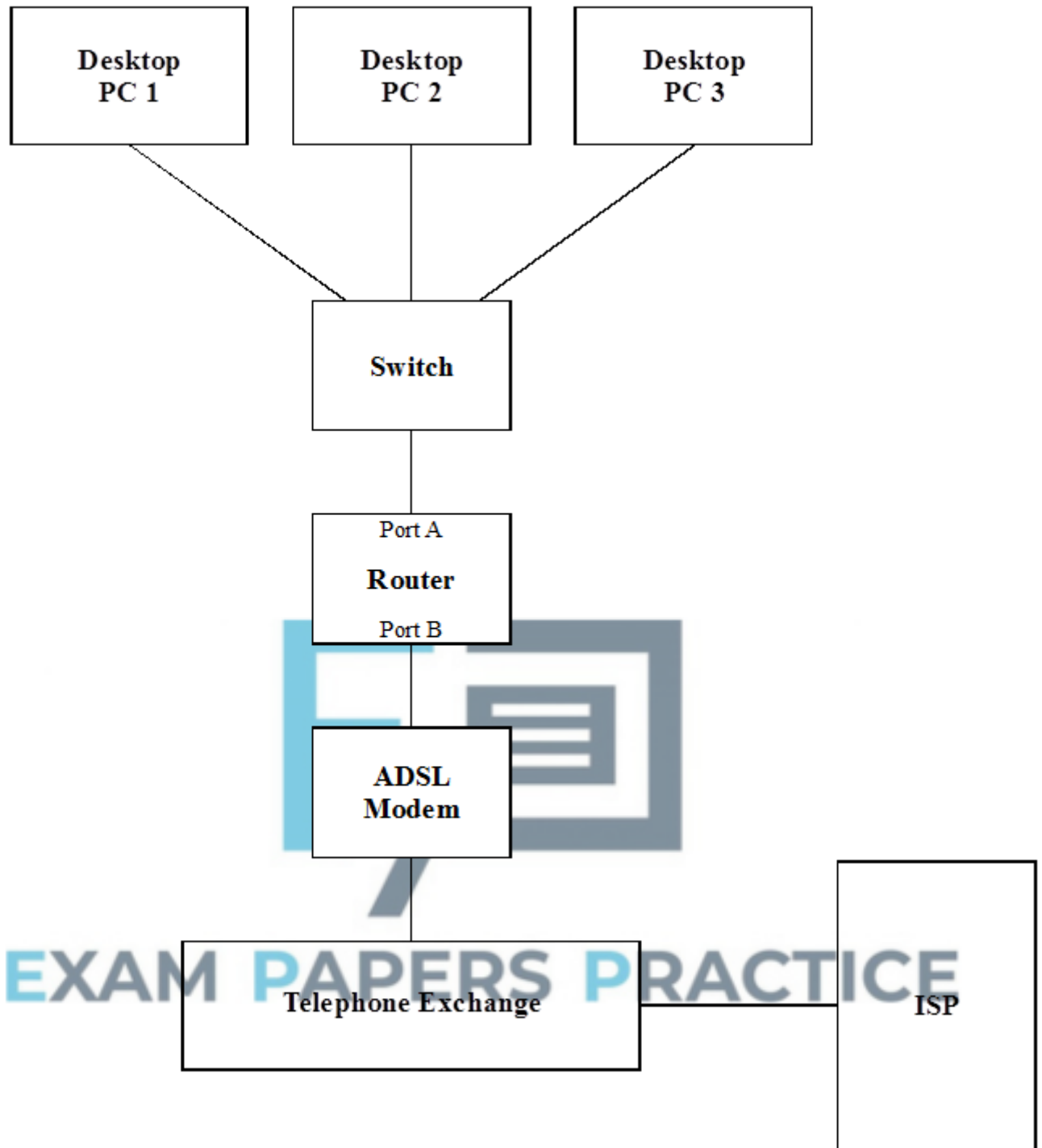


Figure 2

- (i) What is the role of an Internet Service Provider (ISP)?

(1)

- (ii) What is a router?

(1)

The image shows a window titled "Internet Protocol (TCP/IP) Properties". Inside the window, there are two labeled text input fields. The first field is labeled "IP address:" and contains the text "192.168.1.2". The second field is labeled "Default Gateway:" and is currently empty.

Figure 3

- (iii) **Figure 3** above shows part of the TCP/IP configuration window displayed on the VDU of Desktop PC 1. What IP address should be entered for the Default Gateway?

(1)

(Total 9 marks)

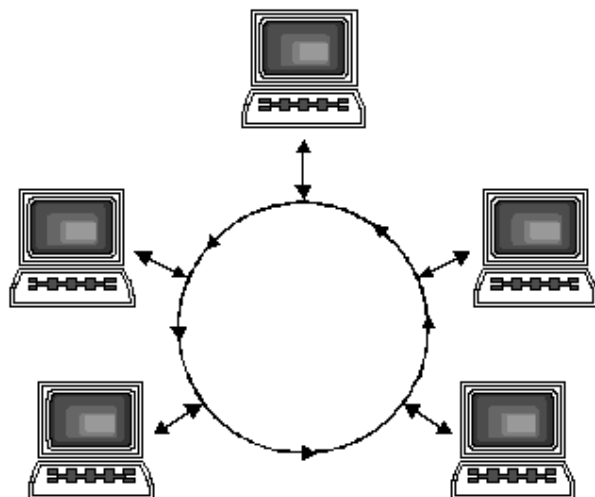
Q31.

Acme Design, a small graphic design firm, has several stand-alone computers which staff use for their design work. They would like to use a LAN (Local Area Network) to share printers, scanners and plotters.

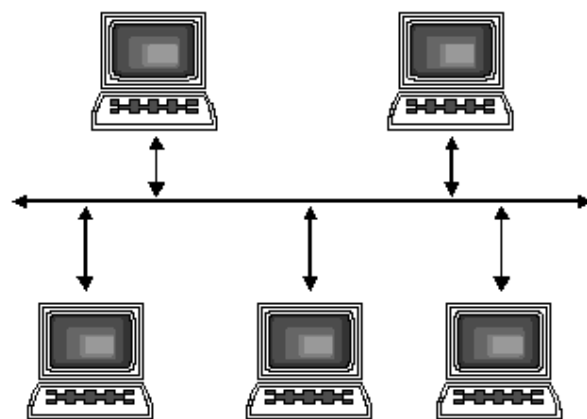
- (a) What extra hardware is needed for each stand-alone computer to be connected to a LAN via cables?

(1)

- (b) Computers could be connected in one of the topologies shown below.



Topology A



Topology B

- (i) Name these network topologies.

A _____ B _____

(2)

- (ii) Give **one** advantage of topology A over topology B.

(1)

- (iii) Give **one** advantage of topology B over topology A.

EXAM PAPERS PRACTICE

(1)

- (c) (i) What is a protocol?

(1)

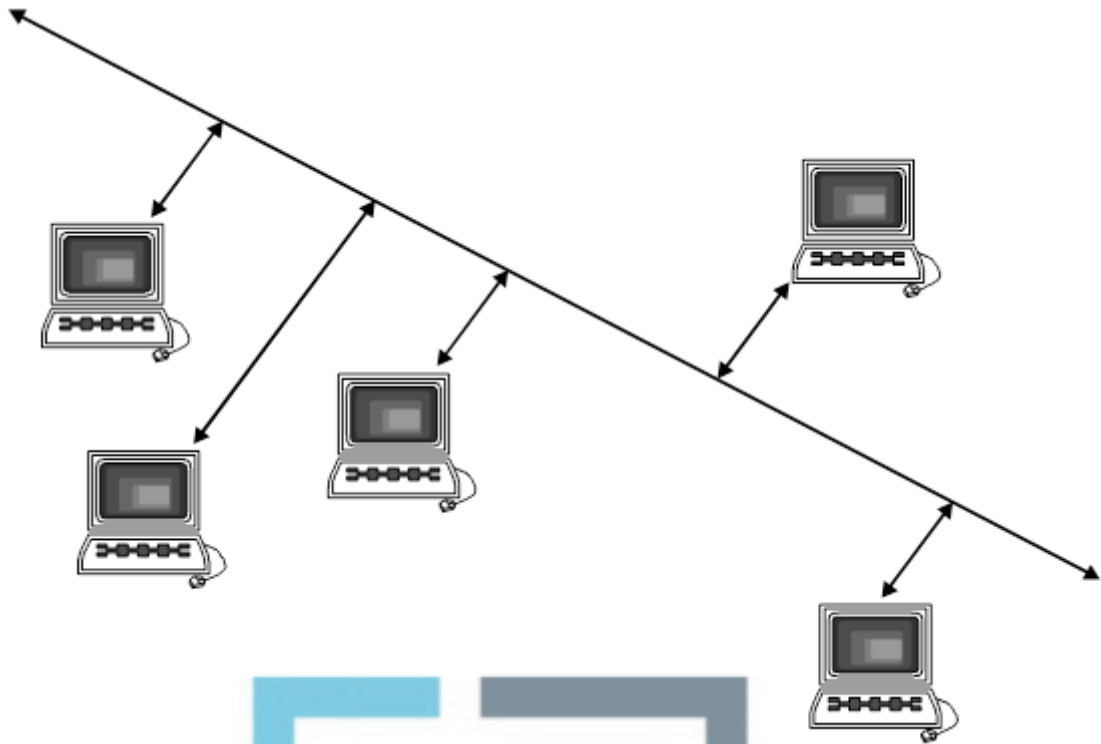
- (ii) Why is a protocol needed?

(1)

(Total 7 marks)

Q32.

A small organisation has several computers in an office connected to form a network as shown below.

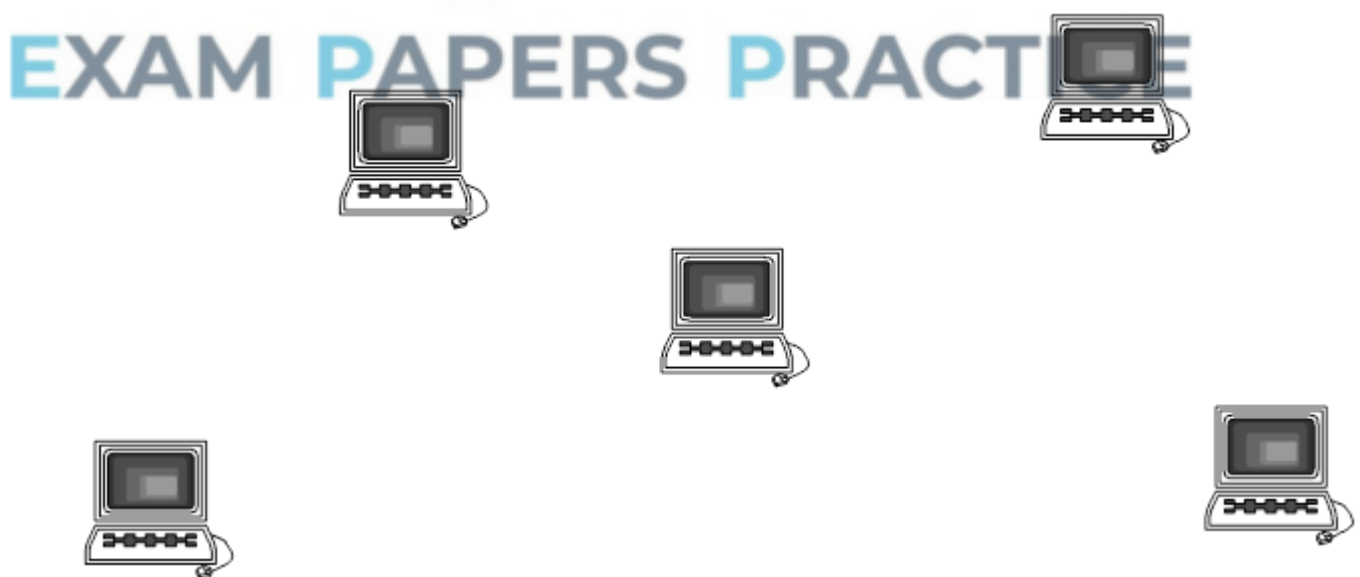


(a) What is the name of this network topology? _____

(1)

(b) The network could instead be connected as a star topology.

(i) Draw the connections between the computers in a star topology in the diagram below.



(1)

(ii) State **one** advantage of a star network compared with the network you have named in (a) above, and give a reason.

Advantage _____

Reason _____

(2)

(Total 4 marks)

Q33.

A small company has several stand-alone computers which staff use for word-processing letters and accessing the products catalogue, stored in a database, to answer telephone enquiries from customers. A copy of the database is stored on each machine.

(a) The company has been advised that networking the computers would be beneficial.

(i) State **two** advantages for the business of a local area network (LAN):

1. _____

2. _____

(2)

(ii) What extra hardware is needed on each stand-alone computer to connect it to a LAN via cables?

EXAM PAPERS PRACTICE

(1)

(b) Computers could be connected in a topology such as a star network or a bus network.

(i) State **one** advantage of a star network over a bus network.

(1)

(ii) State **one** advantage of a bus network over a star network.

(1)

(c) The company director is also interested in trading via the internet, and is advised to

get a *domain name*.

- (i) What is a domain name?

(1)

- (ii) Give an example of a domain name.

(1)

- (d) A staff newsletter is published regularly and a copy pinned to the notice board for staff to read. One member of staff suggests it would be easier for colleagues to read the newsletter if it were published on the company *intranet*.

What is an intranet?

(2)

(Total 9 marks)

