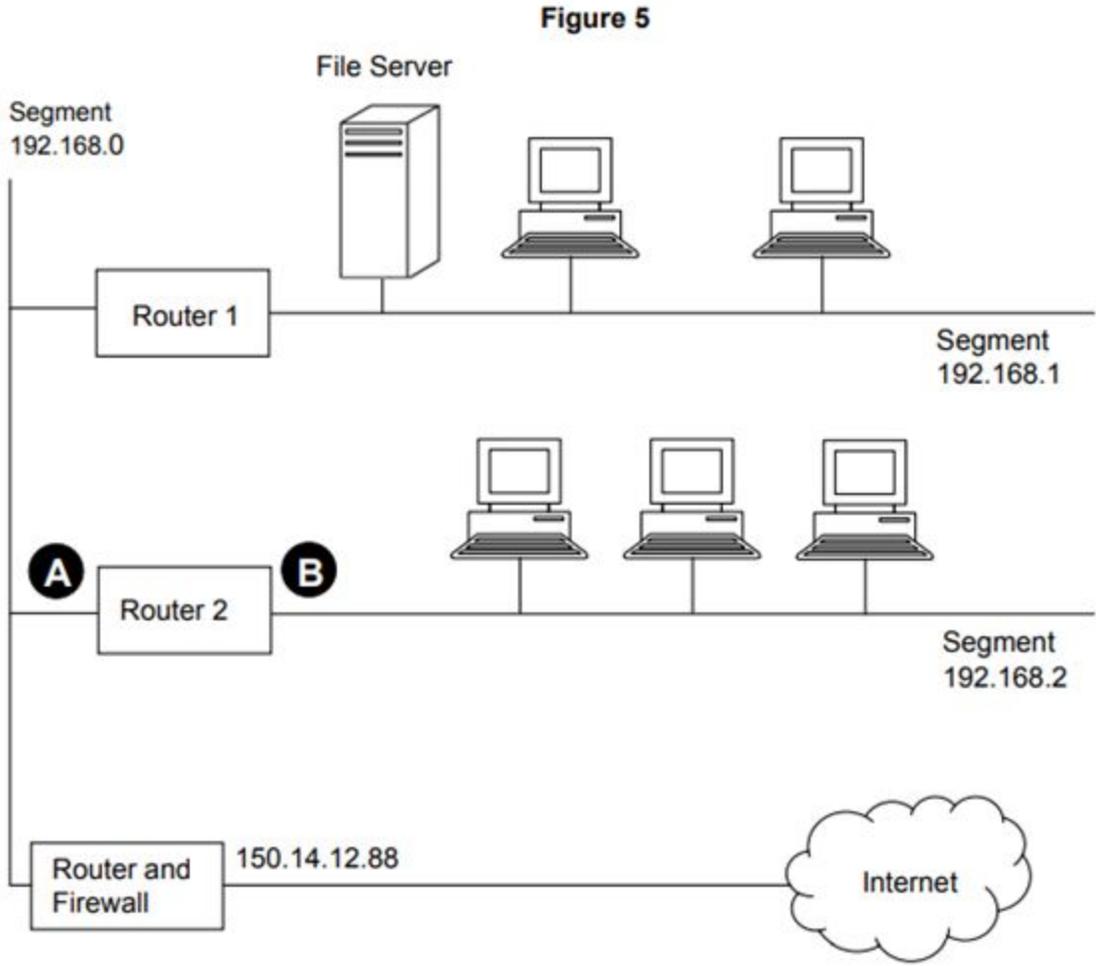


AQA Computer Science A-Level
4.9.2 Networking
Past Paper Questions

June 2011 Comp 3

8 **Figure 5** shows the topology of a particular computer Local Area Network (LAN) that is divided up into segments.



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

Explain why the LAN has been segmented.

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.....
.....
.....

(2 marks)

8 (d) Alternatively, the LAN could have been constructed using a star topology.

8 (d) (i) State **one** advantage of using a bus topology and explain how the advantage is achieved.

.....
.....
.....

(1 mark)

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

.....
.....
.....

(1 mark)

10 (b) (ii) When the computer has a document to print, the computer and printer must perform a handshake. **Table 2** shows the steps involved in a handshake to send a single character along the serial link to the printer.

Write labels for the missing steps in the **Data/Request Sent** column of **Table 2**, assuming that the printer is able to accept the character.

Table 2

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 marks)

June 2012 Comp 3

8 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.

8 (a) The analyst initially plans to use either a peer-to-peer or a Client-Server network.

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

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(2 marks)

June 2016 AS Paper 2

0 7

A school has installed a wireless network with multiple wireless access points.

0 7 . 1

What hardware component is needed for each device that is going to be connected to the wireless network?

[1 mark]

A student is trying to use his own mobile device on the school network. He has all the necessary hardware and software, all the hardware devices are working correctly and he knows the correct SSID and WPA2 key for the school network. However, he is still not able to connect to the wireless network.

0 7 . 2

Describe a security measure, other than logging in, that the school might have put in place that is preventing this student from connecting his own mobile device to the network.

[3 marks]

07 . 3

Explain why preventing students from using their own mobile devices on the wireless network is likely to improve the performance of the school network.

[2 marks]

07 . 4

Explain the role of a Service Set Identifier (SSID) in wireless networking.

[2 marks]

07 . 5

WPA2 is an example of a protocol. Explain what is meant by the term protocol.

[2 marks]

June 2017 AS Paper 2

0 8 . 3

Explain how disabling SSID (Service Set Identifier) broadcasting can increase the security of a wireless network.

[2 marks]

0 8 . 4

Explain how the use of a MAC (Media Access Control) address white list can increase the security of a wireless network.

[2 marks]

June 2017 Paper 2

0 7

Between 2008 and 2010, a company that was gathering data for an online mapping system, using cars fitted with cameras and WiFi equipment, collected some information that was being transmitted on personal WiFi networks. The company apologised for doing this and an investigation found that a small number of software developers had been responsible for adding this functionality to the mapping system data collection software.

In the context of this example, discuss:

- how it was possible for this data to be collected.
- what steps the owners of the networks could have taken to prevent the data from being collected.
- what legal and ethical issues might have arisen as a result of collecting this data.
- what lessons the company might have learnt from the incident and how their practices might have changed as a result of it.

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

[12 marks]

0 9 . 2

Explain the difference between a physical topology and a logical topology.

[2 marks]

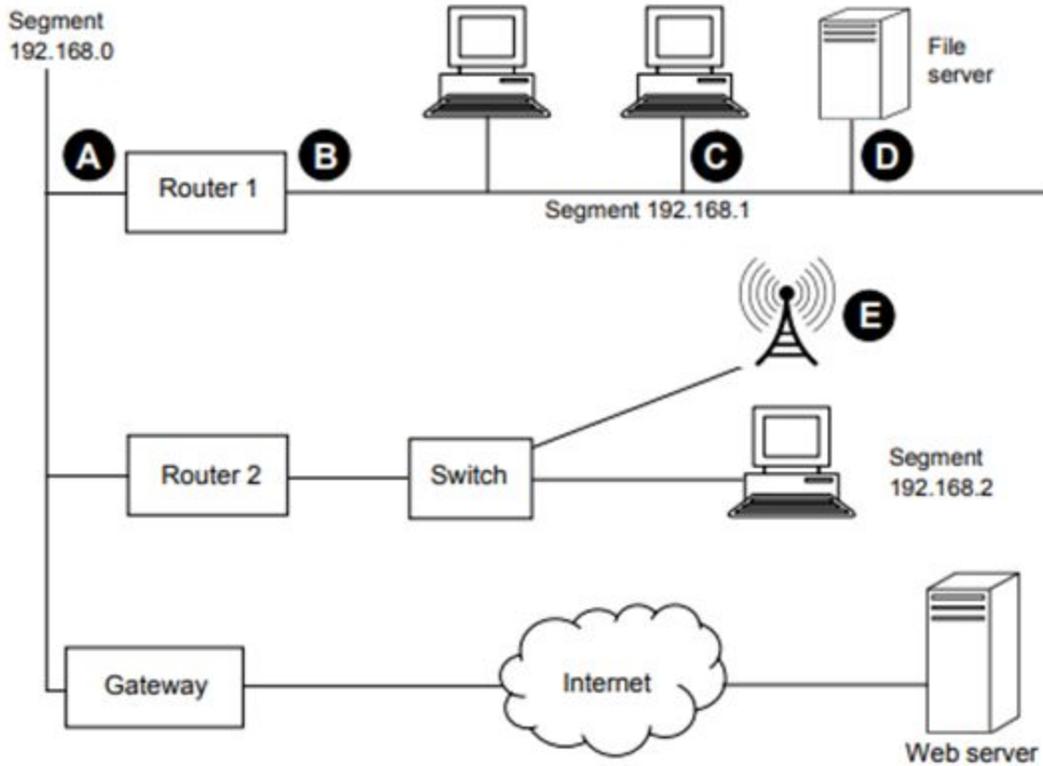
June 2013 Comp 3

5 A student is using her computer at school.

Figure 8 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**.

Figure 8



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

.....
(1 mark)

5 (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 8**. Wireless communication is less secure than communication using cables.

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

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.....

.....

(1 mark)

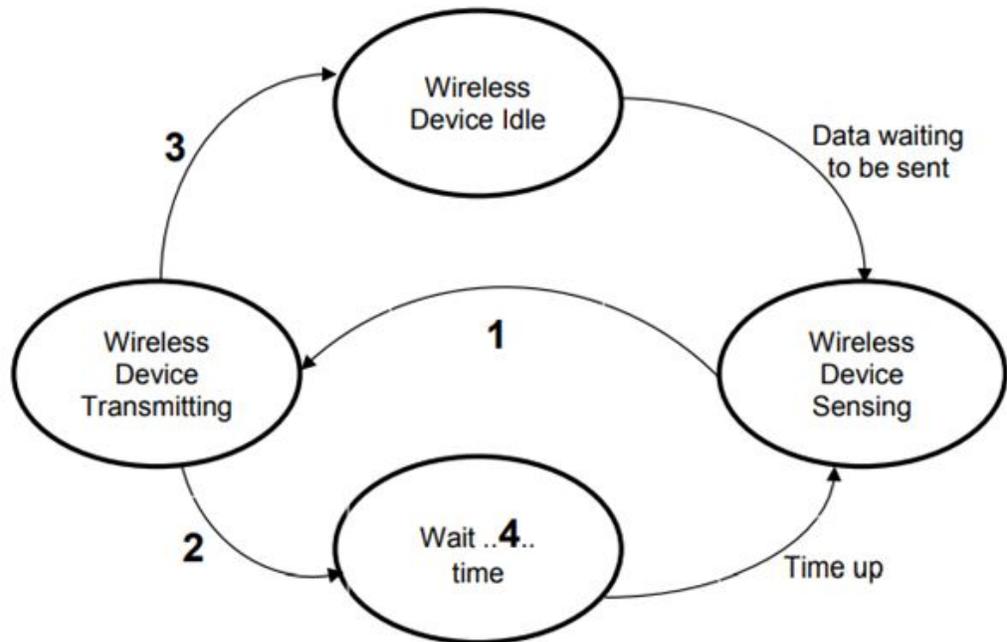
Specimen AS Paper 2

0 4

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

Figure 1 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).

Figure 1



0 4 . 1

Complete **Table 2** by writing in the descriptions that should appear at positions **1** to **4** in **Figure 1**.

[4 marks]

Table 2

Label	Description
1	
2	
3	
4	

0 4 . 2

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

[3 marks]
