Name: _____

IAL IT Topic 2 Examiner's Report

Date:

Time:

Total marks available:

Total marks achieved: _____

Examiner's Report

Q1.

(i) asks where a laptop's MAC address is held. The mark scheme lists acceptable answers.

(ii) asks how MAC addressing can be used to prevent unauthorised mobile devices connecting to a LAN.

The mark scheme lists four marking points and gives examples of how they might be combined. Any coherent description that includes two of the marking points should get the marks.
The marking points may be phrased differently. e.g. 'MAC addresses are unique', might be given as 'every laptop has a different MAC address'.

Q2.

(i) is about advantages of using Ethernet over WiFi. The mark scheme lists acceptable answers.

Answers about cost and range were not accepted.

(ii) is about advantages of using WiFi over Ethernet. The mark scheme lists acceptable answers.

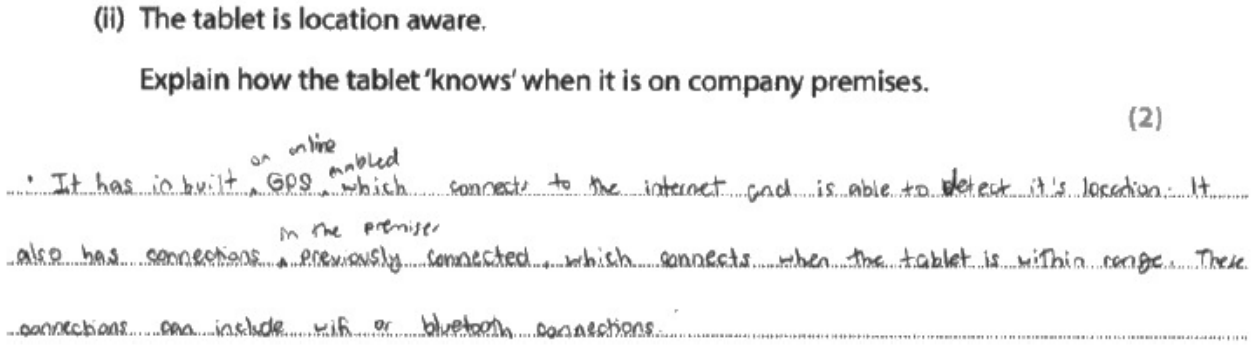
Answers about cost, range, and absence of cables were not accepted.

Q3.

(ii) This question was about how location awareness works, in the context of a delivery driver's tablet computer knowing when it has reached company premises.

Frequently, candidates who wrote about GPS were confused as to how it works, with many saying that the satellites are somehow doing the calculations and telling the tablet where it is.

Those writing about using Wi-Fi often did not say that the tablet had to have Wi-Fi enabled for it to detect the company's signal.



(ii) The tablet is location aware.

Explain how the tablet 'knows' when it is on company premises.

(2)

• It has in built an online enabled GPS which connects to the internet and is able to detect it's location. It also has connections in the premises previously connected which connects when the tablet is within range. These connections can include wifi or bluetooth connections

Results Plus: Examiner Comments

This answer receives one mark for the part about GPS.

It receives two marks, just enough, for the Wi-Fi explanation.

Total: 2 Marks

(ii) The tablet is location aware.

Explain how the tablet 'knows' when it is on company premises.

(2)

A aps (global positioning system) technology maybe used by the driver's tablet, which uses 4 satellites and microwave signals to locate the exact coordinates of the driver an tablet

Results Plus: Examiner Comments

This is a typical one-mark GPS answer.

The candidate knows something about GPS, but does not say anything about a stored/home location being needed.

Total: 1 Mark

Q4.

This question asked why a video needs to be sent over Ethernet cables while the video's audio track can be sent over Bluetooth. It required the candidate to understand the difference in file size, as well as the difference in bandwidth of the two transmission media.

When a video is sent to the projector it requires an Ethernet cable connection but the audio track for that video can be sent to the sound system via Bluetooth.

Explain why the video must be sent by Ethernet but the audio only needs Bluetooth.

(2)

The ethernet sends the entire video to the projector, and since the projecter does not have any speaker, It will connect to the sound system via bluetooth and therefore enable the user to hear and see the video with low latency.

Results Plus: Examiner Comments

The candidate is simply describing the situation, which was explained in earlier parts of this question. It does not answer the question.

Total: 0 Marks

When a video is sent to the projector it requires an Ethernet cable connection but the audio track for that video can be sent to the sound system via Bluetooth.

Explain why the video must be sent by Ethernet but the audio only needs Bluetooth.

(2)

The video track is consisted of image and audio, therefore a proper ethernet conection is required to send the ~~image~~ video directly to projector with out any Lag or loss of data, And as the audio file is small, it can be transfered to the speaker via bluetooth

Results Plus: Examiner Comments

This response is a slightly different approach, well-linked to the question.

First half of example 2 plus implied file size difference.

Total: 2 Marks

When a video is sent to the projector it requires an Ethernet cable connection but the audio track for that video can be sent to the sound system via Bluetooth.

Explain why the video must be sent by Ethernet but the audio only needs Bluetooth.

(2)

This is because a video file is generally much larger in size due to the amount of things going on in it. But since an audio file is nothing but sound it does not have much size in terms of file size and so can be easily transferred via bluetooth.

Results Plus: Examiner Comments

This answer says only that video files are bigger than audio files, obtaining mark point 1.

Total: 1 Mark

When a video is sent to the projector it requires an Ethernet cable connection but the audio track for that video can be sent to the sound system via Bluetooth.

Explain why the video must be sent by Ethernet but the audio only needs Bluetooth.

(2)

The video contains more data packets hence it'll may not be possible or take longer time to send via bluetooth. ~~But~~ However, audio can be sent through bluetooth since it has less datapackets, it'll easily transfer to the sound system.

Results Plus: Examiner Comments

This response is a variation on the file size mark point.

It concerns there being more data packets in video than audio. Since the question is about sending files, this is an acceptable alternative.

Total: 1 Mark

Q5.

This question concerned the difference between VoIP and TCP/IP.

It asked why TCP/IP is not suitable for making phone calls. The question was not answered well, with many candidates thinking that TCP/IP was somehow unable to handle packets derived from analogue/voice.

Phone calls can be made over the internet using voice over internet protocol (VOIP).

TCP/IP and VOIP both use packets to carry data, but only VOIP can be used for making a phone call.

Explain why TCP/IP is not suitable for making a phone call.

(2)

TCP/IP is slow because it has to send packets and wait until they are received and a message is sent back so as to reduce error rate whereas VOIP sends lots of packets in one direction without having to wait hence it is faster and a call can be held in real time

Results Plus: Examiner Comments

This is a good answer, with the candidate knowing that TCP/IP has error-checking that can cause delays in the signal.

Total: 2 Marks

Phone calls can be made over the internet using voice over internet protocol (VOIP).

TCP/IP and VOIP both use packets to carry data, but only VOIP can be used for making a phone call.

Explain why TCP/IP is not suitable for making a phone call.

(2)

• When computer devices using TCP/IP to transfer data, it need run communication protocol, that will cost time. It means using TCP/IP to making a phone call that will have a long time delay than VOIP.

Results Plus: Examiner Comments

This candidate understands that TCP/IP messages have time delays but does not explain why, or give a result of such delays.

Total:1 Mark

Phone calls can be made over the internet using voice over internet protocol (VOIP).

TCP/IP and VOIP both use packets to carry data, but only VOIP can be used for making a phone call.

Explain why TCP/IP is not suitable for making a phone call.

(2)

As VoIP can convert starts of as analouge data and is required to be converted to digital and vice versa when reached to it required destination, TCP/IP doesn't provide this feature thus VoIP is used.

Results Plus: Examiner Comments

The candidate has confused what happens with a modem (analogue to digital) with the difference between TCP/IP and VOIP.

Total: 0 Marks

Q6.

(i) and (ii) are multiple choice questions and the only correct answers are given in the mark scheme.

Q7.

(i) asks for an expression for a calculation that converts between gibibytes and gigabits. No calculation was needed, although a small proportion of candidates tried to do one. None of the

attempted calculations were correct.

The marks were for correct placement of items in the expression.

(ii) asks why file transfers might not reach the rated speed of the cables in the LAN. The mark scheme lists acceptable answers.

Answers about cable or other hardware damage were not accepted.

Q8.

(i) asks where a hardware firewall would be located in a LAN. The mark scheme lists acceptable answers.

(ii) asks where a software firewall would be located in a LAN. The mark scheme lists acceptable answers.

Q9. No Examiner's Report available for this question

Q10.

Many candidates either did not attempt it or appeared to stop after a brief try. Those who did try to complete the question often scored over half marks although none managed full marks.

Q11.

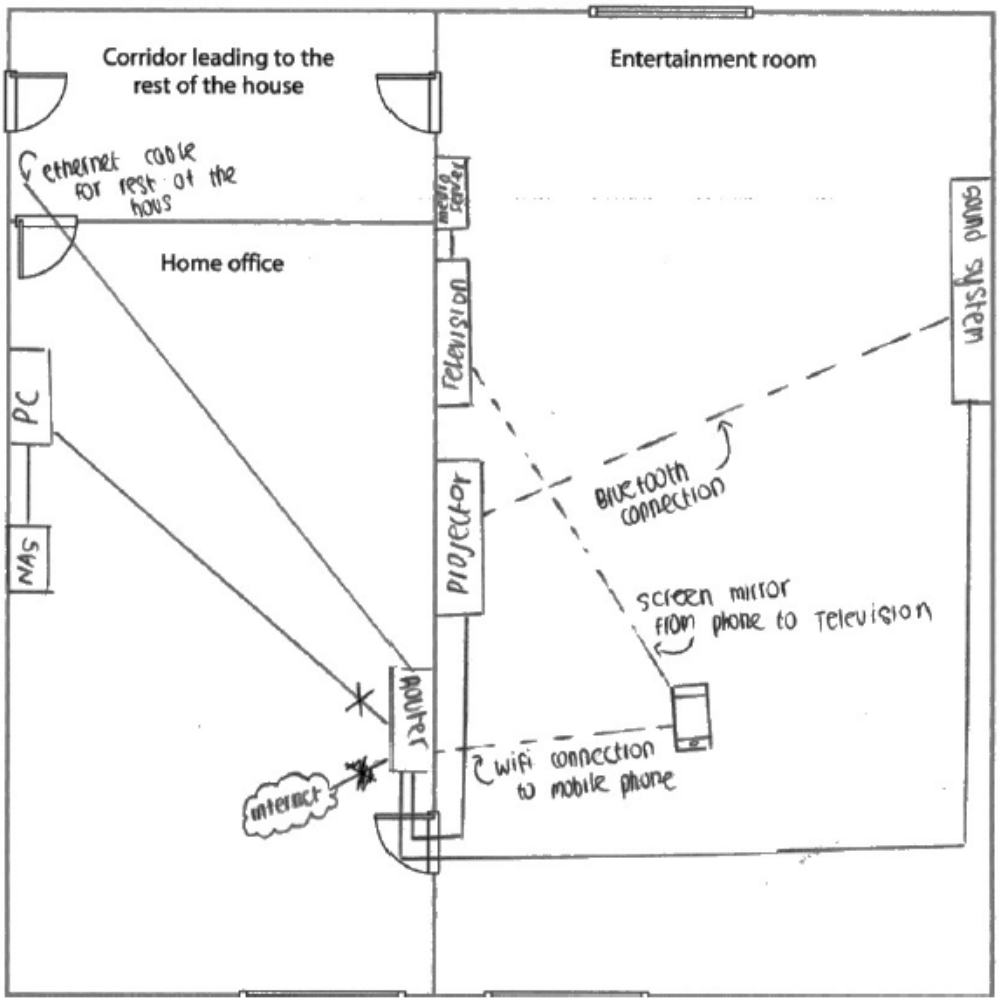
(a) This was a large practical question. Candidates were asked to analyse a set of requirements for an extension to a home network. They then needed to draw a network diagram that met those requirements.

The specification does not include a standard set of network symbols, so candidates were told they may use a labelled box or symbol. Marks were **only** awarded for labelled items.

The question stated that connection media, Ethernet and wireless, must use solid and dotted lines respectively. Candidates could only obtain marks for other ways of showing connection media if they were clearly labelled and used consistently in their diagram.

Nearly everyone who attempted the diagram was able to gain some marks. Common

weaknesses were in not showing the existing connections to the internet or the rest of the house.



Results Plus: Examiner Comments

The answer receives:

Mark points 1 and 2, Internet connection going to a router

Mark point 3, cable to the rest of the house

Mark point 4, NAS and PC in office, with cable

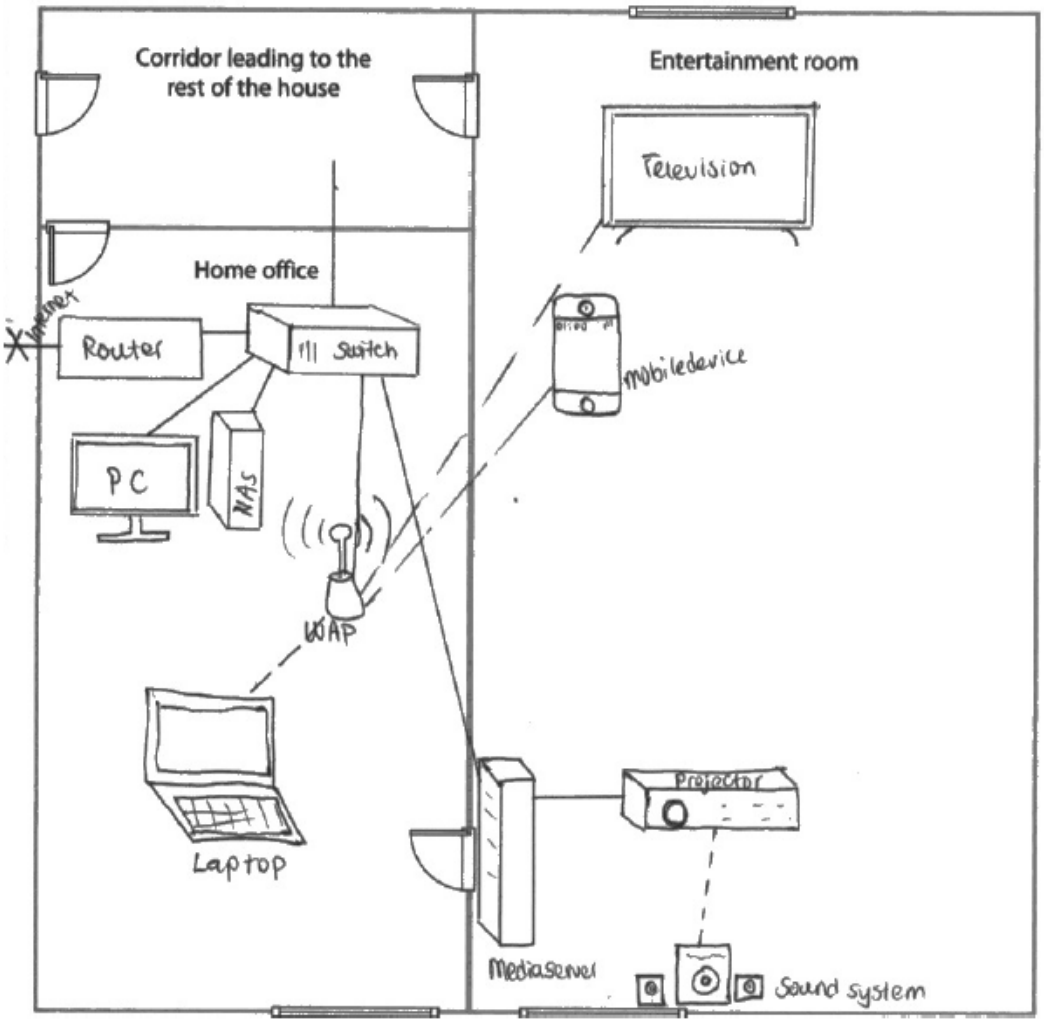
Mark point 10, mobile device linked to TV

Mark point 11, projector linked to sound system

The diagram does not include a laptop, switch or WAP, so misses mark points 5 to 8.

The TV is not linked to the network by cable, so misses mark point 9.

Total: 6 Marks



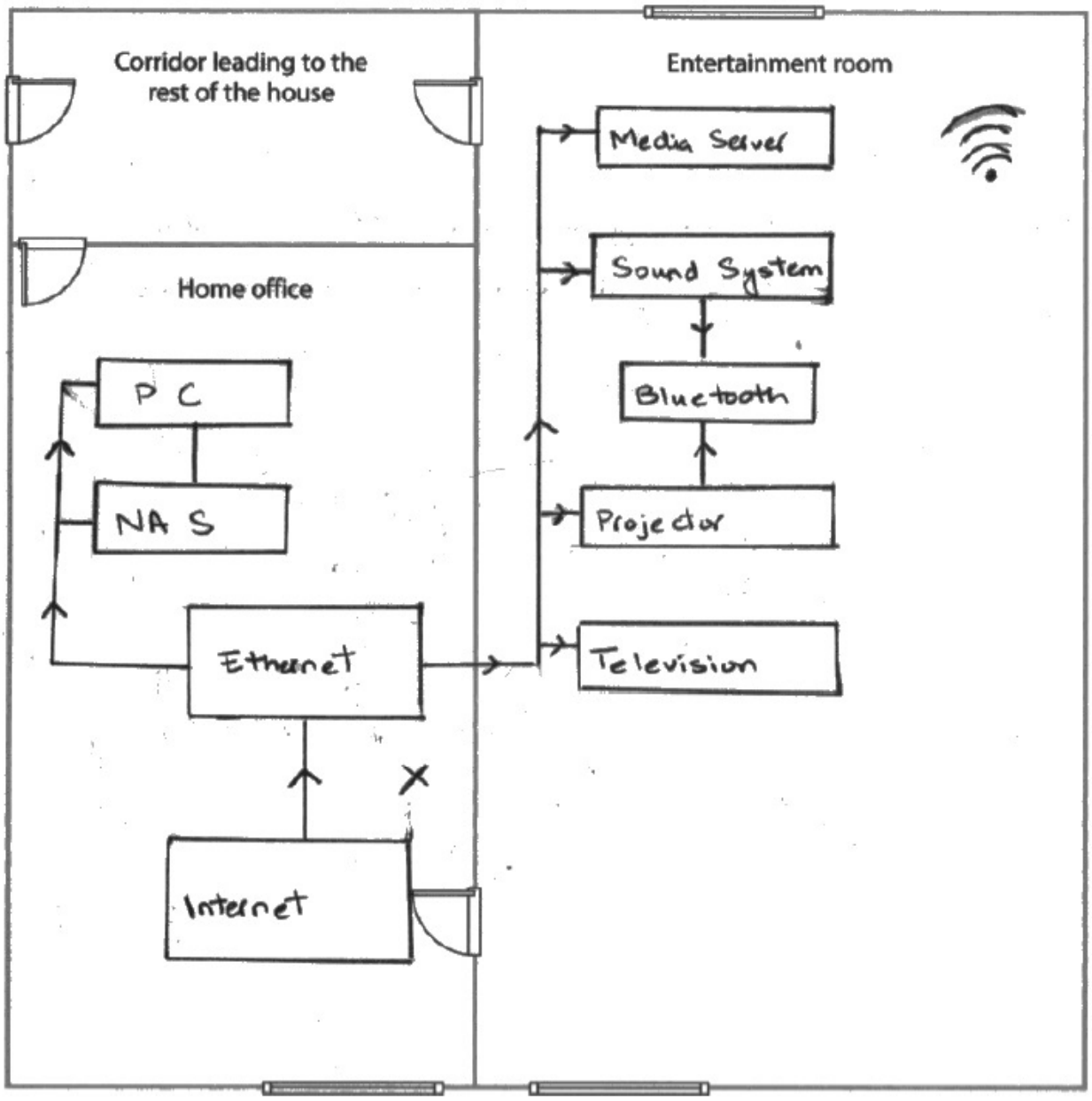
Results Plus: Examiner Comments

The diagram only misses mark point 9, the TV is not linked by cable.

The short cable leading into the room top left is the minimum acceptable for mark point 3, cable to rest of house.

The candidate draws a number of 'realistic' symbols, eg the laptop and PC. These would not receive a mark if they were not labelled correctly.

Total: 10 Marks



Results Plus: Examiner Comments

This diagram receives:

Mark point 1, the internet connection. It does not need to be outside the house.

Mark point 4, NAS and PC connected by cable, ignore the arrows on the cables.

Mark point 9, media server, projector, TV with cables. Ignore the way the cable branches.

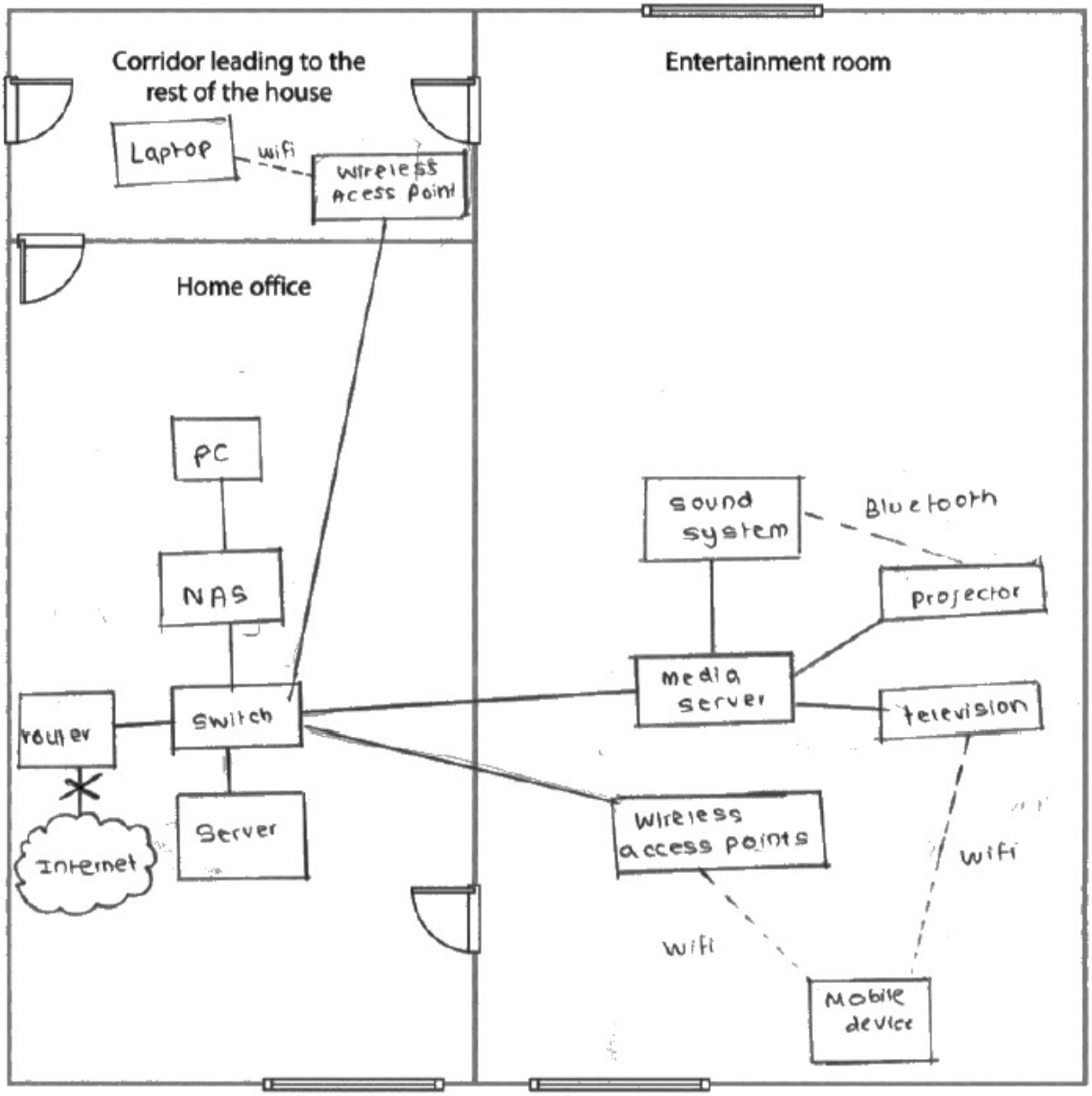
It does not receive mark point 11, projector wireless link to sound system. Although there is a box saying bluetooth, the link is shown using cables.

It does not receive mark points 6 or 7 because the object that might be a switch is labelled Ethernet.

There is no laptop, WAP, mobile device, or link to rest of house shown in the diagram.

Total: 3 Marks

(b)(i) This question asked for the candidates to show where a hardware firewall could be added to the diagram. It was poorly-answered, with numerous candidates trying to put the hardware firewall inside an existing device instead of adding it to the network.



(b) Paula's network can be improved by adding a hardware firewall.

(i) Draw an X on your network diagram to show where the hardware firewall should be located.

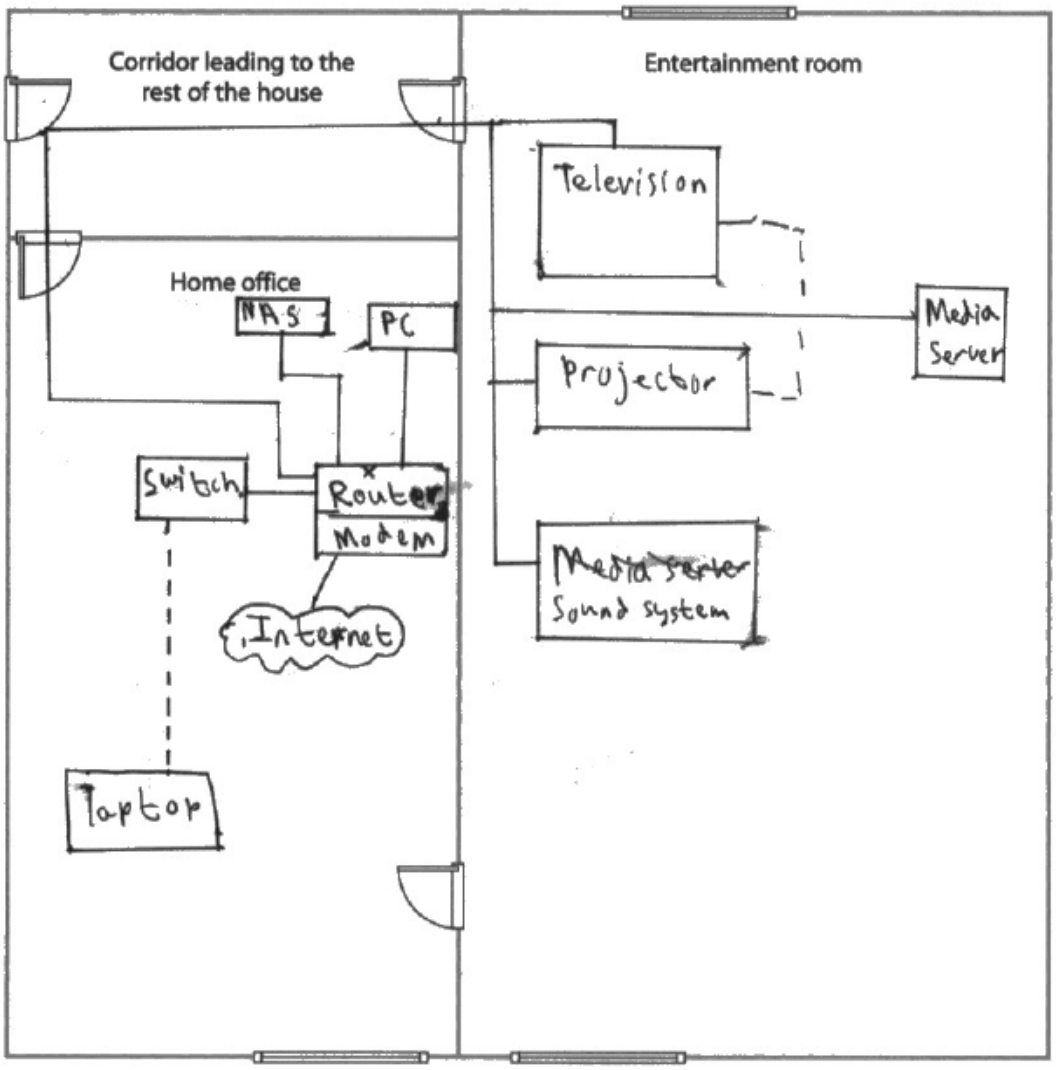
(1)

Results Plus: Examiner Comments

This is the correct answer, with the X between the internet and the router.

If the candidate had not had a router in their diagram, the X would have been acceptable between the internet and the first network device to which it connected.

Total: 1 Mark



(b) Paula's network can be improved by adding a hardware firewall.

(i) Draw an X on your network diagram to show where the hardware firewall should be located.

(1)

Results Plus: Examiner Comments

Although the diagram shows the internet and the router, the candidate has put the hardware firewall inside the router instead of adding it bewteen the internet and the router.

Total: 0 Marks

(b)(ii) This question asked for an advantage of a hardware firewall over a software firewall. It was not answered well, with many candidates saying that hardware firewalls could only be attacked/hacked at their physical location instead of via the network/internet.

This is a zero mark answer

(ii) Explain **one** advantage of a hardware firewall over a software firewall.

(2)

It's a physical hardware so it can be trusted and no one can access it by hacking you need to be physically there to access it.

Results Plus: Examiner Comments

This answer illustrates the common, incorrect idea that a hardware firewall can only be hacked at the firewall's location.

This is a two mark answer.

(ii) Explain **one** advantage of a hardware firewall over a software firewall.

(2)

It prevents unauthorized devices from comeing or entering the network ~~while~~ and protects all devices from ~~unauthorized data~~ malicious data while software firewall only protects the device with the fire wall installed.

Results Plus: Examiner Comments

This answer is mark point 2, protecting the whole network rather than just the device it is installed on.

Q12. No Examiner's Report available for this question

Q13.

This is a short practical question about a local area network in a museum.

This is worth six marks.

The mark scheme lists six items that must be shown in the diagram and gives an example of a

network layout. Reasonable alternative names, applied consistently, are allowable, e.g. screen/touch screen/interactive display would all be allowed.

The specification does not give network diagram symbols, so anything sensible is allowed including simple boxes for each item. Marks are awarded for labelled symbols, not the symbols themselves.

The layout and symbols do not have to be the same as those in the mark scheme, as long as the components are labelled and in the correct locations.

Q14.

This is a short essay question about measures to reduce the threat of hacking for a local area network in a museum.

This is worth six marks.

The indicative content in the mark scheme includes a wide range of possible security measures. Good answers do not need to include all the measures shown.

The level three descriptor requires 'accurate and relevant knowledge, and a balanced and fully developed discussion'. Balance may be satisfied by discussing measures from two or more areas of the indicative content.

Relevancy can be shown by linking the measures to the context of the museum/LAN.

Q15.

The majority of candidates attempting this question gained at least 3 marks. It was not unusual to award the full 6. Some good diagrams showed data flowing between the layers. Occasionally candidates lost marks as they mixed up the order of the layers.

Q16. No Examiner's Report available for this question

Q17.

This was very poorly answered, very often with no response. Where it was answered the majority discussed encryption rather than encapsulation. Only a minority mentioned headers but some

did discuss the information being moved in the layers.

Q18.

In (i) many candidates attempted to discuss how it was quicker and less likely to be hacked as it has less layers. Many candidates did not attempt this question.

In (ii) Many candidates understood that IPv6 has more addresses available than IPv4 but relatively few knew that it was also more secure. Far too many candidates answered the question in terms of the address structure. e.g. IPv4 uses dot separators while IPv6 uses colons, IPv4 is in decimal while IPv6 uses hexadecimal. This type of response does not answer the question.

Q19. No Examiner's Report available for this question

Q20.

(ii) This question asked what was meant by a network communication protocol.

Less-able candidates often tried rearranging the words in the question, saying that a network communication protocol is a protocol used for communicating over a network.

Slightly more-able candidates tried saying the same thing in different words. Neither group received a mark.

(ii) State what is meant by a network communication protocol.

(1)

A set of guidlines in accessing and sharing data over the internet

Results Plus: Examiner Comments

This answer achieves mark point 2.

"Over the internet" is an acceptable alternative to over a network.

(ii) State what is meant by a network communication protocol.

(1)

a protocol in which you use the internet to communicate with different devices

Results Plus: Examiner Comments

This is a variation on a protocol for communicating over a network and does not receive a mark.

Total: 0 Marks

Q21.

(i) Asks about security risks when using an NFC card to pay for entry to a botanic garden.

This is worth four marks but is effectively two lots of two marks.

The answers in the mark scheme are indicated to be 'such as' and are therefore not a definitive list. The answers need to be relevant to the context of paying for entry, so answers about the card being stolen or skimmed/cloned would not be correct.

(ii) Asks how the data being transmitted by NFC can be protected.

This is worth two marks and the correct answer is to set up secure channels to prevent eavesdropping. Secure channels involve data encryption, so a simple answer such as encrypt the data would be worth one mark.

The question is about data being transmitted so answers involving card shields or other methods of blocking the card from being read would not be correct.

Q22.

(i) This question and the following, (ii), concerned requirements for joining a public Wi-Fi hotspot.

(i) asked why mobile devices joining such a hotspot should be allocated a dynamic IP address. Many candidates understood that mobile devices would join more than one network, but they

were not always able to explain the consequence of this.

Less-able candidates appeared to think it was an anti-hacking or anti-tracking measure.

Mobile devices can connect to wireless networks at public Wi-Fi hotspots.

(i) When a device connects to a hotspot it needs an IP address.

IP addresses can be static or dynamic.

Explain why a mobile device should be allocated a **dynamic** IP address.

(2)

The dynamic address changes depending on what networks you connect to. Because mobile phones are designed to connect to different networks, they are allocated a dynamic IP address

Results Plus: Examiner Comments

This answer shows that the candidate knows about connecting to more than one network but they have not expanded the answer enough for a second mark.

Total: 1 Mark

Mobile devices can connect to wireless networks at public Wi-Fi hotspots.

(i) When a device connects to a hotspot it needs an IP address.

IP addresses can be static or dynamic.

Explain why a mobile device should be allocated a **dynamic** IP address.

(2)

As many users will disconnect and connect from that public hotspot, therefore applying a unique IP address to each device connected would not be possible as there are a limit of IP addresses. thus dynamic is better

Results Plus: Examiner Comments

This answer does not quite fit with the marking points because the candidate has written about users, rather than devices, connecting.

The meaning is clear, however, and the limited number of IP addresses available to a hotspot is a valid point.

Total: 2 Marks

Mobile devices can connect to wireless networks at public Wi-Fi hotspots.

(i) When a device connects to a hotspot it needs an IP address.

IP addresses can be static or dynamic.

Explain why a mobile device should be allocated a **dynamic** IP address.

(2)

dynamic IP addresses can be changed easy, so it can prevent anyone from hacking or gaining access to your network or device.

Results Plus: Examiner Comments

This is a typical answer regarding anti-hacking.

Total: 0 Marks

(ii) This question and the previous, (i), concern the requirements for joining a public Wi-Fi hotspot. (ii) asks why a mobile device joining such a hotspot sends its MAC address.

Many candidates understood that MAC addresses are unique but they were not always able to expand the answer for a second mark.

Less-able candidates appeared to think it was an anti-hacking or anti-tracking measure.

(ii) The mobile device will send its media access control (MAC) address to the hotspot.

Explain why the MAC address is used in making the connection.

(2)

MAC address is a fixed address in the mobile device, It uses MAC address because it doesnt change

Results Plus: Examiner Comments

This answer does not quite achieve mark point 1, MAC address is unique. "Fixed" is not an acceptable alternative to 'unique'.

Total: 0 Marks

(ii) The mobile device will send its media access control (MAC) address to the hotspot.

Explain why the MAC address is used in making the connection.

(2)

Because a MAC address is unique to every device so they are identified in a network, so during the process of connecting the device can be known as an Authorised user.

Results Plus: Examiner Comments

This answer would achieve:

mark point 1, MAC address is unique

mark point 2, it is used to identify the device

mark point 5, allows hotspot to block/allow devices

Total: 2 Marks

(ii) The mobile device will send its media access control (MAC) address to the hotspot.

Explain why the MAC address is used in making the connection.

(2)

MAC addresses are unique to a given device hence it will not be confused for another device that may already be connected.

Results Plus: Examiner Comments

The answer achieves:

mark point 1, MAC address is unique

mark point 4, prevents two devices being confused for each other

Total: 2 Marks

Q23. No Examiner's Report available for this question