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## Introduction

The examination for this unit requires candidates to explore how current and emerging digital technologies impact on the lives of individuals, organisations and society. This is an untiered paper that has been specifically designed so that easier questions are more prevalent earlier in the paper, becoming progressively more difficult later on. This paper has been designed to be accessible, so that candidates of all ability ranges will find questions that are both challenging and interesting throughout. Candidates will find that 'command words' are used consistently in the paper to indicate the type of response expected. It is hoped that candidates will demonstrate the knowledge, understanding and skills required to be confident users of ICT.

Successful candidates often provided more detailed responses, providing more than just simple statements, including examples and reasons where expansions or explanations were required.

In the extended questions, candidates must demonstrate a better understanding of the requirement to 'discuss'. Candidates should develop their use of subject-specific and technical language, and avoid giving generic responses, responding in the context of the question.

## REPORT ON INDIVIDUAL QUESTIONS

### Question1

Q1 (a) - This was generally well answered by candidates with most identifying speakers / headphones as the output device. A few candidates were confused with input and output devices, with some identifying a microphone instead.

Q1 (c) - It is important that candidates are clear with regards to key terms and definitions. Many used latency or lag to refer to delay or buffering, which is incorrect.

Q1 (d) - Compared to previous series, candidates are getting better at defining bandwidth, by using **Maximum** and **Can** to show the potential of the data that can be carried. Some are still incorrectly referring to the speed of the data.

Q1 (e) - Candidates tended to get marks from the second mark point – WAN covering a large geographical area or providing access to the Internet. Some then just went onto repeat this point rather than suggest what this meant, i.e. more people being able to receive the stream.

Q1 (f) - It was clear that candidates knew it was copyright that could help protect the unauthorised distribution of the performance, but many candidates didn't mention that it offered a legal protection or that it was legislation that offered this protection. Few answers relating to DRM, but not many mentioned copy protection or went onto how it protects. There were quite a lot of answers relating to encryption, passwords or asking Tessy's permission which not relevant in this question.

Q1 (g)(i) - More candidates are using 1024 correctly now for GiB / MiB, rather than 1000 for GB / MB, however, there were still occasions where 1000 was used. Some candidates provided an equation, which when cancelled down gave the correct answer. Some candidates were overcomplicating the expression. Candidates that struggled to create an expression, were awarded a mark if they had identified how many recordings could be stored. It is important to note, that when establishing this number – it is rounded down to the number of whole recordings, even if mathematically it would technically be rounded up, as the amount of RAM is finite.

Q1 (g)(ii) - Generally, this was not answered well. Candidates either redefined clock speed or actually stating it allowed more programs to be opened, which would relate to the size of RAM, rather than the speed of the CPU. Responses suggesting 'things run quicker' are too vague.

Q1 (g)(iii) - Generally, responses given related to the speed and capacity of hard disks compared to magnetic tape. Where candidate mentioned 'cheaper' they failed to qualify that. It is important that candidates get into the habit of qualifying responses such as faster, easier, cheaper, etc.

Q1 (g)(vi) - This was answered well with most candidates stating processor / CPU.

Q1 (g)(vii) - Responses to this were mixed. Where candidates achieved the mark, they tended to mention using a microphone. However, a number of candidates confused the USB port, with a USB memory stick and reference storage in their answer. This does not improve how audio can be recorded. It is important that candidates make that distinction between the port / connection and storage.

Q1 (h)(ii) - It is important that where examples are given in the question stem, they are not being repeated. Here we are looking for two other ways. Most candidates achieved both elements of the encryption mark point. Candidates did identify 'firewall', but struggled to explain it prevented unauthorised access through the blocking of ports.

Q1 (h)(iii) - Candidates appear to understand the principles behind data protection laws. A common incorrect response was about data being processed fairly and lawfully – which in effect is a restate of the question. Most candidates referenced – accurate, up to date, no longer than necessary and consent. Incorrect responses made related to copyright and plagiarism.

Q1 (h)(iv) - Candidates could describe what a cookie was, but they were asked about the use and how it benefits subscribers. Some answers did not relate to this context and said about saving settings and remembering passwords. On the whole candidates were able to say content was personalised by matching it to browsing history.

## Question 2

Q2 (a) - Generally answered well with most mentioning like and share. Where candidates failed to achieve the mark they had not identified a feature of a social network. For example they said 'feedback' or 'review' these are not a feature of a social network, but could be a way to use a feature such as a comment.

Q2 (b)(i) - The question focussed on the negative effect on mental health. There were several incorrect responses – these either related to physical health and safety, eye strain and RSI which weren't relevant, the impact on physical health because of laziness or a repeat of cyberbullying which was already identified in the question stem. There were few answers relating to time management, confirmation bias or polarisation. The most popular answer was from MP2 isolation / loneliness and a lack of face-to-face contact / relationships / interactions, but quite a few candidates did discuss FOMO/anxiety and comparing themselves to others/best case scenario.

Q2 (b)(ii) - Candidates either confused this with privacy policies and terms and conditions, rather than an AUP. Or they identified rules / consequences that might feature in an AUP.

Q2 (c) - Although many attempted this question, few candidates scored well. Some candidates mentioned, file sharing privacy and encryption which were irrelevant. There were incorrect answers relating to collaboration, sharing across the world, and video calling. Many answers just too general, showing that candidates were not able to distinguish between threaded discussions and discussions in general. Those that did have some understanding often talked about the topics being discussed rather than how the structure of the discussion helps. Those that achieved marks tended to talk about the ease of navigating the discussion.

Q2 (d)(i) - Generally, candidates were answered well. Although some candidates mentioned reliability, which had been given in the question already. Some candidates referred to accuracy, the question was asking about negatively affected, accuracy would be positive, it is inaccuracy that would be negative.

Q2 (d)(ii) - Candidates tended to go into a lot of detail describing the process, rather than just stating they would compare / make comparisons.

Q2 (f) - It is important that candidates read the information given in the question. It stated that Tessy lives in an area with excellent connectivity. They were being asked to explain a reason why some people in the same area as Tessy, where there is excellent connectivity, cannot access the Internet. Therefore, those that gave responses relating to poor connectivity, interference, blockages, etc. did not achieve the marks. It is important that candidates show some discernment in the selection of their response. Most correct responses related to affordability and social / cultural reasons. However, candidates did then struggle to expand on this for the second mark.

### Question 3

Q3 (a)(ii) - Generally, this was answered well with Gateway, Switch / Hub being popular answers. However, candidates again gave router as a response, which was already given in the question stem. There were candidates that mentioned cable, but this was too vague.

Q3 (a)(iii) - A popular question and generally answered well, but most marks tended to come from the 'send the data to the next router' and 'using the fastest / best route'. It is important to note the fastest route may not be the shortest route if there are high levels of traffic on that route, hence why shortest was not accepted. There were few that mentioned that the router checked / read the IP address and even less mentioning that it then checked its routing table. There were candidates that had in effect re-worded the question by stating it gave access to the internet / network.

Q3 (a)(iv) - Most answered this correctly with mark point 2 being the most popular response.

Q3 (a)(v) - Many candidates were able to explain that device names would not be unique, but few candidates could explain the issue this would cause. Where they were able to identify the issue, they tended to reference data being sent to the wrong device or not being received. We did not see anyone mention that they are not allocated by the server.

Q3 (b)(ii) - Again, candidates confused lag / latency for buffering. Where candidates were able to suggest it would be less susceptible to buffering, they were not able to explain why this was the case. Although said a LAN covered a small geographical area, they did not specifically say this meant the data doesn't have as far to travel.

Q3 (c) - Candidates found this question challenging. Many provided response relating to broadband and set-top boxes which relate to satellite and the Internet which were given in the question stem. The question was looking for two other ways.

Q3 (d) - Some candidates confused the role between a server and a client. Stating that it was responsible for centralised backups – therefore describing a server not a client. Centres should make sure candidates are aware of the client's role and the server's role. The client requests data from a server.

Q3 (e) - It was clear that candidates were not sure of the difference between the two networks, with many giving drawbacks of peer-to-peer networks, such as no centralised backup, as a drawback of a client-server network. They also suggested that peer-to-peer networks allow file sharing where client-server networks do not – both networks allow file sharing. Candidates also seemed to think that they were more insecure than peer-to-peer networks, stating that as client-server networks made use of wired connections, they were more susceptible to hacking. There were a lot of incomplete answers regarding client-server network being more costly/complex with many candidates not going into enough detail about the reason / answers being too general. Where candidates achieved marks, it tended to relate to the downtime / loss of access to resources / single points of failure.

Q3 (f) - Candidates frequently mentioned encryption and then went onto repeat a description of this. Many candidates wrote about VPNs hiding the user's location or accessing content that might be geographically restricted, although valid points in relation to VPNs, it did not relate to the context of the question where Tessy was sending financial data to a music company.

Q3 (g) - Most were able to identify either wired or wireless connectivity and some were able to expand it appropriately. However, some candidates did not make a decision and didn't go on to explain.

#### **Question 4**

Q4 (c) - There seemed to be confusion by the candidates as to what was meant by open-source software. Rather than the source code being open to users, candidates thought that this meant Tessy's files were open and accessible or could be modified and stolen by others or that Tessy was selling the software rather than using the software. Where candidates were awarded marks, it was generally for the accept responses rather than the main mark point identified in the mark scheme.

Q4 (d) - Most candidates identified updating the software. Some did suggest editing the source code. However, some candidates just repeated the questions, 'by adding new features'.

Q4 (f) - Many candidates achieved the second mark point relating to portability. Fewer went onto mention the reason or just didn't go far enough with statements such as 'the laptop could be USED on the go' and did not relate it to the scenario / context. Some candidates said that laptops were cheaper because they came with built in peripherals (such as mic and speakers) whereas these would need to be purchased separately with desktops, which is not necessarily the case and external peripherals might produce better quality recordings. Some candidates thought that laptops were higher quality or had better performance than desktops or "laptops are higher in performance / have more features than desktops", again this is not necessarily the case.

Q4 (g) - This question seems to have been particularly difficult for candidates, many either not answering the question or only partly attempting it. Candidates struggled to achieve Level 3 responses where they had not discussed the points identified in the question – they had talked about different types of connectivity such as Bluetooth, Infrared, etc. rather than broadband, mobile broadband and cellular networks. It is important that candidates read the information provided to them in the question and then use this to help structure their response or use it as a checklist to help their response focussed on what has been asked. Candidates also didn't seem to know the difference between mobile broadband and cellular networks. A cellular network provides access to phone calls, not the Internet. Or that Tessy would be carrying the network hardware around to connect to broadband, rather than accessing the venues broadband connection. Often candidates just listed advantages and disadvantages of the different connectivity types, rather than relate it to the scenario.

## Question 5

Q5 (a) - Some candidates just explained what the digital divide was – information rich / poor, rather than the impact of this on individuals. Some responses were too vague such as will not have up to date information or a lack of knowledge without being specific. Popular correct responses came from reduced access to job opportunities, learning opportunities, services and entertainment.

Q5 (b) - Candidates answered this relatively well, with most responses focussed on the improvement to people's health and the increase in face-to-face interactions / communication. There were some responses that mentioned social interactions, which was not quite enough as you can interact socially online, it was the fact the interactions were face-to-face that was the key. Some candidates mentioned culture being preserved. Some candidates discussed not being exposed to cyberbullying or inappropriate material, but this was not relevant to the question of positive social impacts on communities. A few candidates gave negative impacts rather than positive ones. There were also quite a few answers giving impacts of having access to digital technologies rather than impacts of having *no* access to digital technologies. Some other general wrong answers related to benefits to the environment.

Q5 (c) - This question was quite popular in terms of candidates providing responses. Most answers related to MP1 and MP2 – natural cooling systems from the environment and using renewable energy sources. E-Waste related responses were also quite popular. We didn't see responses relating to MP4, 5 and 6. Some candidates suggested that they advertised clean-up projects or recycling projects, but this would not mitigate their own environmental impact.

Q5 (d) - Although this one seemed to be answered better than 4g, the same points still apply. Candidates struggled to achieve Level 3 responses where they had not discussed the points identified in the question. It is important that candidates read the information provided to them in the question and then use this to help structure their response or use it as a checklist to help their response focussed on what has been asked. Although many candidates did talk about the 3 key points, much of their discussion was general and were, in effect, defining what was meant by global reach of the Internet, competition and copyright. They did not necessarily discuss the impact. Those candidates that went beyond Level 1, were knowledgeable about the use of streaming platforms to promote their music, the ease of producing and launching their music to the global audience.

## **Paper Summary**

Based on their performance on this paper, candidates are offered the following advice:

- Expand and explain answers using examples and reasons, especially where more than a simple statement or list is requested
- Where a context or scenario is provided, respond with the context of the question in mind
- Read and interpret the question prompt to focus on the specific requirements and provide more relevant responses that address the critical aspects of the question.
- Develop understanding of the key pieces of network hardware and their specific role with regards to a network
- When required to give one other example/reason, ensure the response is discrete from the given example/reason
- Allocate time to plan responses to the extended questions

