

Examiners' Report June 2022

International GCSE Information and Communication Technology (ICT) 4IT1 01R



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Introduction

This is the first time that candidates have sat examinations for this unit, which requires them 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' and should note that, where a conclusion is required, it should be more than a repetition of the points already made.

Candidates should develop their use of subject specific language and avoid giving generic responses, responding in the context of the question.

Question 1 (a)

Many candidates' responses focussed on mark point 1 and 2, the ability of the camcorder to record videos or take photos. However, some responses failed to gain the mark as they only referred to 'recording', without the exemplification of video or audio. A few candidates incorrectly assumed 'camcorder' referred to the cable that connects the device to the computer.

Question 1 (d)(i)

Most candidates' responses were limited to the marks relating to who would have access to the photographs; 'less control of who can access them' or 'because unknown users could gain access'. Candidates struggled to develop the consequences of this / why this was a drawback. Where candidates were able to develop their response, they tended to focus on the invasion of privacy or the risk of malicious / criminal activity rather than the ability to re-share. A number of candidates did identify the issues with geo-location features. Common misconceptions related to sharing images via a social network resulted in issues with image resolution and sizing, or limits to uploads (more likely a drawback for email attachments).

Question 1 (d)(ii)

Some candidates have the misconception that the social network or the subjects in the photos own the copyright to Nihal's photographs.

Question 1 (e)(i)

Candidates that achieved both marks answered this question in a variety of ways. They either identified the correct number of photographs or the correct expression or produced correct, but inefficient, expressions.

A few still used 1000 rather than 1024. The most common error appeared to be multiplying by 8 in the process.

Question 1 (e)(iii)

Where candidates failed to gain the mark, they incorrectly identified that the SD card in the camera stores the camera's start up instructions.

Question 1 (e)(iv)

Misconceptions related to reducing the dimensions of the image rather than the file size. Those with that misconception then went onto identify application software, such as photo editing software, rather than utility software.

Question 1 (f)

Many candidates' responses tended to come from mark point 1 rather than mark point 2. For those that spoke about the processor producing more heat, they were unable to link it to the impact of this on the hardware. However, there were a significant number of candidates that incorrectly reasoned the increased processor speed would affect the image quality (blurry or shaky because the processor would be too quick), the size of the file created and the impact on storage capacity. Other misconceptions related to price or requiring a bigger camera.

When a question requires an explaination of a disadvantage (or advantage), candidates should state the disadvantage (or advantage) and then also give the **reason why** it is a disadvantage (or advantage).

(f) Explain one disadvantage of increasing the speed of the camera's processor.





This response gained both marks from the first mark point:

The disadvantage (reduced battery life) is stated. A reason is given, as 'It takes up more power' was enough to imply increased use of energy by the faster CPU.



Always give reasons in responses to explain questions.

Question 1 (g)(i)

Correct responses tended to come from mark points 2, 3 and 5. Some candidates repeated the characteristic given in the question stem, therefore only giving one additional characteristic. Many candidates did not seem to understand that flash memory could be rewritten or suggested that it was cheaper rather than more expensive per MiB. Other responses tended to be too vague, again not exemplifying the response with 'access' or 'per MiB'.

- (g) Flash memory is non-volatile.
 - (i) State two other characteristics of flash memory.

(2)



An example of a response that gained both marks.

Question 1 (g)(ii)

Candidates did not appear to understand how data is stored on flash memory and spoke in generic terms of how the device is used and how files are transferred onto the device, rather than the specifics of the cells being flooded with electrons. Some candidates confused magnetic and optical storage with solid state / flash. Of those that gained marks, the marks tended to come from mark point 1, 2 and 4, rather than mark point 3.

(ii) Describe how a flash memory device stores data.

(2)

Flosh memory stores data using electric charges, with different amounts of charge that represent binary numbers 1 and 0.



This response gained both marks for 'stores data using electric charges' and 'that represent binary...'

Question 1 (g)(iii)

Although many candidates recognised that the 'data is not lost', they often did not expand on the link to power to be able to gain the mark. A few candidates confused volatile with non-volatile.

Question 1 (g)(iv)

Most correctly identified RAM. Where candidates failed to gain marks, they tended to identify ROM.

Question 1 (h)

Most candidates' responses focussed on the increased storage capacity of Blu-ray disks compared to CDs. Where candidates failed to gain the mark, their response was either too vague ('faster') or referred to the type of data being stored (HD files).

Question 1 (i)

Candidates often gave generic definitions of embedded systems or a generic response, such as taking a photo. Some candidates did start to consider elements such as the shutter or light level, but again these were too vague to gain the mark. Where candidates gained marks it tended to be for mark point 5.

Question 2 (a)

Many candidates were able to identify that OCR reads text or characters. However, some responses such as 'scan form' were too vague. It was clear that some candidates did not understand what the acronym OCR (Optical Character Recognition), in this context, stood for or confused it with OMR, MICR or card readers. Some candidates described what the form might be used for by the hotel rather than the technology itself.

Question 2 (b)(i)

Most candidates' responses correctly said that machine access codes are 'unique' or 'universally unique' or identified the reverse for IP addresses. Candidates would often then go on to repeat this same mark point, rather than make a linked point relating to the advantage. Few identified the fact that they are hardwired to the network interface card. Many would suggest it was 'easier to identify the device on the network', which was not enough as it was, in effect, a reword of the question.

Question 2 (b)(ii)

Few candidates scored both marks. Candidates' responses tended to focus on security issues and misuse of the network, which were part of the same mark point. Candidates often gave the generic 'hackers' comment. Some candidates did talk about 'not transmitting to the correct device', however some failed to gain this mark when they referenced data being transferred to 'users' rather than 'devices'. It was rare for candidates to identify mark point 3.

Question 2 (b)(iii)

Common incorrect responses referred to servers and bridges.

Question 2 (b)(iv)

Candidates showed awareness of the difference of using a network vs dedicated connection to a printer, but struggled to note a disadvantage of this. Candidates' responses tended to refer to people 'hacking the network through the printer' or people viewing printouts / data privacy or 'sharing bandwidth' with another device on the network. Those that gained marks referred to 'overloading with requests' or 'unauthorised print jobs', but then didn't get the second mark for the explanation of this point or how it is a disadvantage.

(iv) Explain one disadvantage of connecting a printer to a network.

(2)become overloaded with various devices connected



An example of a 2-mark response

Question 2 (b)(v)

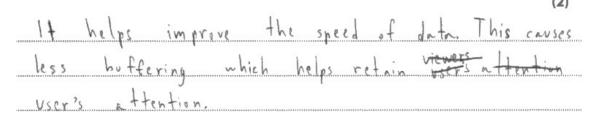
Most candidates correctly linked CAPTCHA tests with its description and Firewall with its description, gaining two marks. The common misconception occurred with Encryption, where candidates continue to say it 'prevents data from being intercepted'. Encryption doesn't prevent interception, just prevents the data from being read should it be intercepted. Therefore, the correct description was 'processes plain text'. When they incorrectly linked Firewall, candidates tended to link it to 'prevents data from being intercepted'.

Question 2 (c)

Candidates struggled with this question and often repeated the question or were too vague in their response, for example 'ensuring fewer bits are transferred', 'better user experience', 'smoother experience'. Where responses achieved marks, they tended to come from the first mark point – 'less buffering', 'less lag', less pausing', etc. and often repeated this point. Few candidates gained marks for the second mark point. They would tend to just repeat 'low bandwidth' rather than 'less bandwidth' being needed.

(c) Nihal streams a film using a low bandwidth connection.







Candidates often struggled to gain the second mark for a correct expansion, as shown here.

Question 2 (d)

Most candidates were able define latency. However, some did not then expand on the reference to low latency or confused low and high latency. A number of candidates were able to answer in context and referenced synchronisation.

(d) Describe low latency.

(2) desembes on time increasing and it taking honcer to transfer.



A common error was to state that low latency causes data to be transferred more slowly, as in this example.

(d) Describe low latency.

low latancy means less delay / the time taken to transfer data from one device to another is low, so it works much faster.



A good example of a two-mark response.

Question 2 (e)(i)

Most candidates provided a response that referred to the second part of the mark point, with 'passwords' being the most common. There was a definite lack of understanding as to the role of a network manager and their responsibility in terms of setting up of user accounts. A frequent misconception related to the use of 'encryption' in this context.

Question 2 (e)(ii)

This question was generally well-answered. Most candidates referred to both parts of mark point 2, with the 'cloud' being the most common location referred to for the second mark. Few candidates referred to the data being 'restored' or 'retrieved' from the backup. Where candidates were not awarded full marks, they often referred to the data (original) being stored remotely rather than a 'backup'.

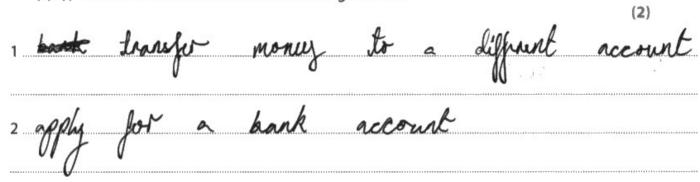
Question 2 (f)

Common incorrect responses were 'calendar', 'milestones' or 'GANTT charts'.

Question 3 (a)(i)

Many candidates' responses identified two general banking services rather than actual features of online banking services and therefore were limited to 1 mark. The most common responses were 'checking balance' and 'payments / transactions / transfers'. Where candidates gained both marks, they often identified one feature and one general service. For those that identified features, most identified mark point 1 or mark point 4. Some candidates confused online banking with online shopping and referred to credit card purchases and checkout procedures.

- 3 Nihal uses an online banking service.
 - (a) (i) List two features of an online banking service.





A response that is too general to gain both marks.

Question 3 (a)(ii)

Correct responses tended to just focus the first mark point – 'relevant adverts'. Few went on to relating this to Nihal's past activity / browsing history. For those that did attempt this, they often talked about 'cookies', but failed to develop where these came from so their answer was too vague. Many candidates misinterpreted the question and answered from Nihal being part of the organisation using targeted marketing in his business rather than the consumer being targeted. The other common incorrect response referred to being able to 'cut overheads' by not having the cost of renting shops – referring to online shopping.

Question 3 (d)(i)

Candidates frequently misunderstood the question and referred to people living online, living in bubbles online, social isolation, lack of social skills, lack of real-life connections, people not socialising like they used to, fake identities, anonymity and being free to say what you like online. They failed to recognise that their behaviour online or geo-blocking impacted on suggestions of people they may be presented with.

Question 3 (d)(ii)

Many candidates did not gain full marks; they were able to identify a negative impact but did not go on to explain the impact. For example an increase in cyberbullying or misinformation. Where candidates did gain both marks from a mark point, it tended to be from mark point 3. However, incorrect responses for this mark point meant it was often linked to health issues rather than there no longer being a need to travel to access services. A misconception often highlighted was the increased access to the Internet led to reduced opportunities for social interaction, but it can often increase such opportunities; it is the face to face element that is harder.

(ii) Explain two other negative impacts of increased access to the Internet.

(4)

1 Increased risk of students becoming victims of cyberbullying. This is because, the internet has made it easy to find a and share embarrassing many people. This impacts mental, emotional well being of People engage in less physical as the internet has allowed tasks like shapping for groceries to be done at home. Mere's no need to travel so it has a negative impact on health



A good example of a response that identifies two impact and gives the appropriate explanation for each.

Question 3 (e)(i)

Most candidates scored both marks with most responses coming from mark points 1, 2 and 4. Some candidates repeated social networking, which was already identified in the question stem, and therefore was not awardable. Some responses did not reference types of online community and suggested that they could contact the hotel direct or friends and family for advice.

Question 3 (e)(ii)

Candidates often achieved a mark for the first part of mark point 2 or mark point 3. They then struggled to describe how that would help Nihal evaluate the trustworthiness of the review. Incorrect responses related to contacting people who have stayed in the hotel directly. Some also related it to checking the trustworthiness of sources of information in general rather than the trustworthiness of the review and seeing if they backed it up with photos or comparing sources rather than reviews.

(ii) Describe one way Nihal could evaluate if a review is trustworthy.

(2)

HR must look at the time lagte at which the review was posted to see whether it's recent or old and irrelevant. He should also look at whether it's reliable or if it's an anomaly he should work at other reviews to see and compare whether it's logical to and backed up by other reviews.



An example of a response that gained both marks, because it relates to the trustworthiness of the review.

(ii) Describe one way Nihal could evaluate if a review is trustworthy.

(2)

com



An example of a response about checking the trustworthiness of the hotel, rather than the trustworthiness of the review.

Question 4 (a)

Candidates often answered this in the context of the impact on working practices rather than on employment itself. Where candidates' responses achieved marks, it tended to be for access to a 'wider' or 'global' workforce, but did not link this to employment networks facilitating this opportunity. A few were able to identify the change in the nature of jobs as a result of the Internet, but often they just talked about more job opportunities being presented rather than the types of jobs.

Question 4 (b)(i)

Candidates frequently defined cloud storage rather than the drawback of its use or referred to the cost of hosted storage, especially if more than a basic level is required. Candidates' responses that gained marks often related to the first part of either mark point, but did not give adequate justification to get the second mark.

Question 4 (c)

Many candidates misinterpreted this question and therefore their responses referenced the use of search engines and how they functioned rather than the use of web browsers. Correct responses tended to come from mark point 2 or 3. Very few came from mark point 1.

(c) Describe the role of a web browser when accessing a website.

ques appropriate results.



A typical incorrect response that highlights a common misconception: that a browser's role is to act as a search engine.

(c) Describe the role of a web browser when accessing a website.

(2)

A neb browser is used to display and request a welpage or nebsite A neb from a web searce. A web browser convests the HTML language on a website or welpages to tents and



A response that gained both marks: 'request a web page or website' and 'from a web server'.

If both marks from MP2 had not already been awarded, then the second part of the response would also be worth 2 marks: 'converts the HTML language' and 'to text and images understood by people'.

Question 4 (d)

Candidates clearly show an understanding of what constitutes a strong password and referred to many of these features. However, they failed to take into account the password given in the question, for example referring to mixed case not being used, when it was, or it needing to be at least 8 characters, when it was 9. Some responses were too vague referencing 'easily guessed' which is more a definition of a weak password, rather than a feature of the password itself. The most common responses were from mark point 1 and 2.

Question 4 (e)

Candidates were able to define phishing, showing a good understanding of what phishing is and the harm it can cause. However, this did not answer the question being asked. Few candidates were awarded both marks. Correct responses often mentioned 'increased awareness' of phishing rather than the increased probability of a user responding.

(e) Explain why phishing messages are sent to many users.

(2)

beople are able to identify phishing messages or o



An example of a response that gained both marks.

(e) Explain why phishing messages are sent to many users.

to many users to



A typical incorrect response that defines phishing, showing a good understanding of what phishing is and the harm it can cause, but does not answer the question.

Question 4 (f)

Most correct responses tended to come from mark point 1. However, a number of candidates mentioned the chemicals in batteries, but then did not go on to say that it was these leaking into the environment that caused the damage. Many mentioned the lack of recycling, which is incorrect; many places now offer recycling services for batteries. Other common misconceptions / incorrect responses related to batteries emitting gases or becoming a fire hazard and exploding.

Question 4 (g)

Banking systems were often described well, but how ICT has helped to protect payment systems was not fully understood or discussed in depth. Responses tended to be limited to Level 1 or 2. Few attained Level 3. Candidates would discuss encryption repeatedly in different forms, which limited attainment, especially as not all necessarily related to the context of payment systems. Candidates would identify a range of points, but then didn't discuss them in any detail or didn't have balance in their discussion. Other than encryption, candidates tended to reference PINs, NFC, OTPs, but not much beyond these. Some mentioned firewalls, again this didn't necessarily relate to the context. Conclusions tended to be a simple statement, if present. Candidates' responses did seem to be more focussed and organised.

ICT is used to provide a wide range of recurity teatmentor
payment systems. One such feature is be use of this and PM
cardy which are used in theancial transactions and require the in
entering of a liv by the wer to occer data unauthorized was do not
know this pilv and two lone connot across the data, reducing travel.
Biometric scanners can also he used which require one were to be privent
as scanners such as fingerprint and its scanners only whence authorise
payments when the authorized wer is around, so mouthorized were
cannot access to data, the person wer has to be present for the
pyment to so through.
I syment systems are also protected by encryption, which the committee
financial transactor data as it travel across a network, so own it
the date is intercepted it is welen unless the cross constance ower
Mas access to the key knorgation includes WPA and WEP.
Fivewall one also used as they soo compare to addresses against a
unitelist blacklist, and unauthorised were un on one in the location will not
he able to acre to the data on the network payment system
Another feature is the use of UPNs, union allow were to transer
dusc on a network wa an encrypted while tion, is the date is protected
a it track agou a he turn, connor be accould be unwinted wess.
thackups are an und to notest payment systems, or financial data is
shored in multiple locations, so can be netriewed it the original is lost,
dumajed or destroyed.
th wonderson, throughte we of passand and PIN, encryptions, prob trendly
and ofter rethods, proment data is secured using ICT, reducing unauthorised

accest.



Content: Chip and PIN, biometrics, encryption, firewalls, VPNs, backups – (but this has limited relevance) – There is a range of points presented, but it is unbalanced and therefore, overall, the content is Level 2.

Each point of content has been explained in terms of what it does and how it protects payment systems / payments, providing good evidence for the Level 3 **evidence** descriptor

The **scenario** has not always been addressed (backups / firewalls). (Level 2.)

The **conclusion** meets the Level 1 descriptor as it is a simple statement

The response is organised and flows well, meeting the Level 3 **clarity and organisation** descriptor.

Overall, the response meets most Level 2 descriptors and was awarded 5 marks on best fit.

Question 5 (a)

Correct responses referenced mark points 1 and 4 or mark points 1 and 2 more often than not. Where candidates limited themselves to one mark, it was as a result of just saying Internet or Wi-Fi rather than specifying the connection / connectivity required. Many candidates referred to software requirements, such as an operating system or a web browser, rather than actual features of a computer.

Question 5 (b)

Many responses related to improving working practices and saving money, rather than the improvements to communication. Candidates' responses that were awarded marks often came from mark points 2 and 4. Few went on to explain the point that they identified.

Question 5 (c)

Candidates' responses of referenced 'visual impairments' to varying degrees. Where candidates struggled was then linking this to a configuration within applications software. Many candidates incorrectly identified hardware to support the disability or separate/additional software, not a configuration within the software being used. The most common incorrect response related to 'text-to-speech'.

(c) Describe how **one** disability can be supported by configuring applications software.

Visual impaignent is one disarrlity that an he supported as the softman endles ligger i cons, contrast of the ger i cons, contrast

(2)



A response that gains both marks: visual impairments (1) can be supported by enabling bigger icons (1)

'enabling contrast of themes' would have gained the mark if two were not already awarded.

Question 5 (d)

This question was generally answered well. Most popular responses came from mark points 2 and 4. This could be because candidates were describing reasons for updating any type of software, rather than specifically system software.

Question 5 (e)

Most candidates identified that compression reduced file sizes. Few candidates gained both marks as they would go onto repeat from the same mark point or suggested the backup was faster as a consequence, rather than transfer being faster.

Question 5 (f)

Incorrect responses often suggested compression, file management / organisation rather than defragmentation.

Question 5 (g)

Candidates performed better on this structured response than the one earlier in the paper with more candidates achieving a high Level 2 or Level 3 response. Good responses tended to talk about sensors in general, their use within cars (temperature, lights, motion and proximity sensors, auto driving cars), the implications of their use, both positive and negative, as well as the ethical considerations. Candidates acknowledged the accuracy and speed of sensors and how they make drivers aware of their position in relation to obstacles, other cars and objects; supporting drivers in making safer choices. Many referenced that the sensors could not make decisions such as choosing between a pedestrian and another car and the issues arising around faulty sensors, etc. However, it was concerning when some candidates wrote about the driver being able to sleep or be driven home whilst under the influence of drugs or alcohol – drivers must be alert and prepared to take over at any point in self-driving cars. Responses tended to be more balanced and again, focus and organisation has improved. Conclusions still need to be improved beyond simple statements. Those that scored highly gave a conclusion that was clearly linked to the discussion given and was well thought out.

(g) Discuss the advantages and disadvantages of using sensors to make decisions for car drivers.

(8)

Sensors are can input information about the bro notherways is took this grathermor ab, bloom larrates produce as output based on what it has been programmed to do. Sensors in cars could halp drivers detect the whether and so they can be programmed to automatically activate the windshield wipers as soon as the shather aggets them, they could also detect use their nicroprocessors to determine the temparature of the cars external and so decide on a temperature to either cool or warm up the inside of the car. Sensors could also detect the level of brightness in the day and switch on a car's headlights when it gets dark. All these will leave the driver with less tacks to perform while driving and so enalding timber to socus on the road. These sensors could also be used when parking to detect the distance from a curb or whole display what is ingrant and Lack of the car to avoid collission. Howen these sensors may not be able to gully dokunine what to do after a circumstance such as if an animal is on the road, they don't know whether to steer the car off the road or whater to stop the car. They may also not be able to determine the severity of a moment such as when there is a light rain and so they may advate the wiper

which could pose as a distraction to the driver. Sensors are also not able to differentiate between different obstacles and so if they was a driver is reversing is walking behind the car a sensor may see it as a small object or not notice it at all, covering serious damage. In Conclusion sensors are provided to aid decision making and not do it completely, so human should regligent while driving in well lowing eventiling Sensors which can't reason emotionally but only systematically.



This response provides lots of good content, meeting the **content** descriptor for Level 3

The supporting expansions provide good Level 3 evidence

There is a clear link to the **scenario** (rights of individuals), which has been addressed clearly. (Level 3)

There is a solid **conclusion** that links back to the statements already made. (Level 3)

There is good focus and organistion, with a comparison between the advantages and disadvantages meeting the Level 3 clarity and organisation descriptors.

Paper Summary

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

- Develop the good practice of expanding and explaining answers using examples and reasons, where more than a simple statement or list is required
- Respond with the context of the question in mind
- Do not repeat responses when more than one example/reason is required
- Identify key words and command words in the question to ensure responses reflect what the question asks
- When required to give one other example/reason, ensure the response is discrete from the given example/reason
- Practise a range of extended questions, not just balanced arguments
- Allocate time to plan responses to the extended questions

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