

Examiners' Report June 2019

IGCSE IT 4IT1 01

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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 a conclusion is not always required.

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 failed to gain marks as they talked about the use of other sensors in the mobile phone and did not focus on the movement sensor.

There were a lot of answers that mentioned the variation in the brightness of the screen and others that talked about temperature sensors.

1 Kiki buys a smartphone.

(a) The smartphone uses a sensor that detects movement of the device.

One way in which the smartphone uses data from the sensor is to switch itself off if dropped.

Give **two other** ways in which the smartphone could use data from the sensor.

(2)

- 1 It could have been used to track the steps done by a user, e.g. Pedometer.
- 2 It could have been used as a compass showing the direction, e.g. North, West, South, East.



This response gained both marks for two discrete correct responses.

Question 1 (b) (i)

Some answers were vague and talked about the connection being 'stronger and safer' rather than 'faster and more secure'.

(b) Smartphones can be connected using wired or wireless methods.

(i) Give **two** advantages to Kiki of using a **wired** method to connect to the smartphone.

(2)

- 1 Wired connection is usually faster as it is connected directly to a smartphone without any obstacles
- 2 Wired connection is more stable as it can not have any breaks in connection ^{secure as no one can} ^{access your} data



This response gained both of marks available. Speed and security were common correct responses.

Question 1 (b) (ii)

Many responses mentioned that wireless is easier to setup and that no wires lying around keeps things tidy. Both of these responses were not rewardable.

(ii) Give **two** advantages to Kiki of using a **wireless** method to connect to the smartphone.

(2)

1 DEFINATELY MORE COMFORTABLE, EASY TO MOVE
AROUND.

2 CHEAPER, NO NEED TO BUY A WIRE.



The reference to comfort in this response is irrelevant, but a mark is gained for 'easy to move around'.

The second response gains a mark, too.

Question 1 (d) (i)

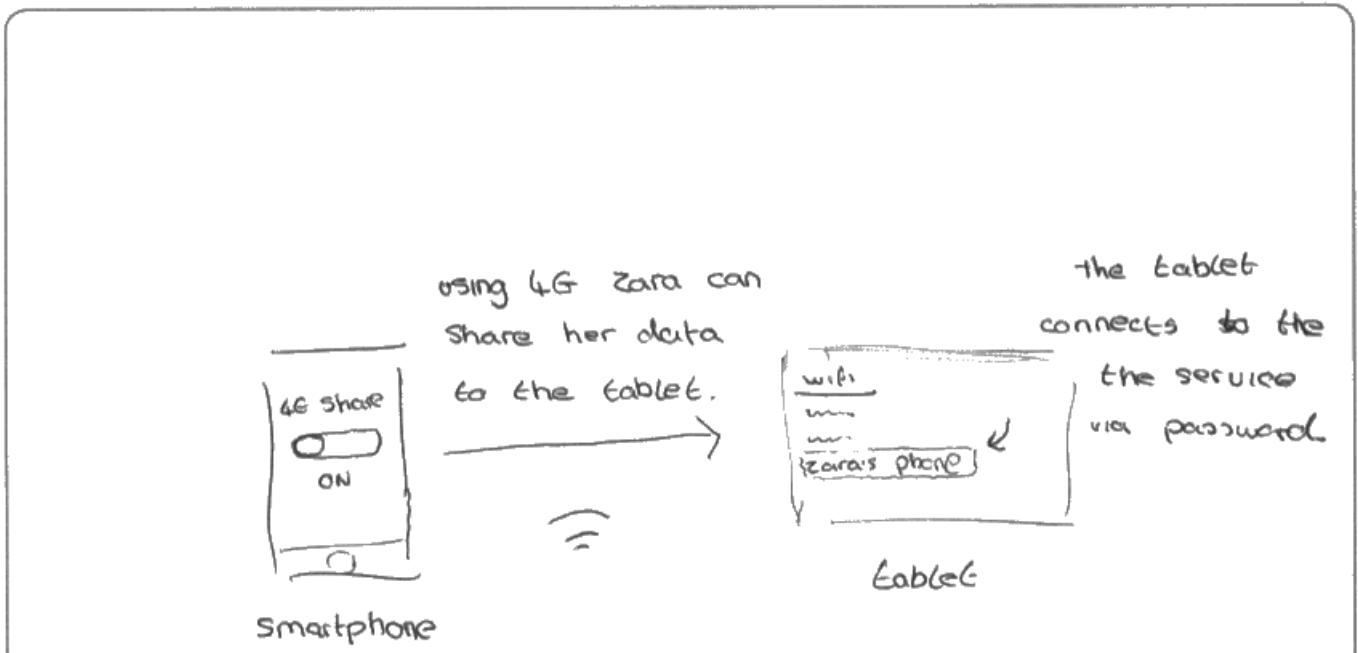
This question required candidates to draw a diagram to show how a smartphone can be used to provide a tablet computer with an Internet connection

(d) Kiki meets her friend, Zara.

- (i) Draw a diagram to show how Kiki's smartphone can be used to provide Zara's tablet computer with an Internet connection.

Label each component and the connectivity you use in your diagram.

(4)



All 4 marks were awarded for this response.

'4G', displayed on the phone gains two marks (from mark point 1 and 2) - see Additional Guidance in the mark scheme.

The third mark is gained as the devices are shown to be connected and the Wi-Fi symbol gains the fourth mark for the connectivity between devices being shown.

Question 1 (d) (ii)

There was a tendency to repeat the wording of the question which did not allow the award of marks.

- (ii) Explain why sharing an Internet connection would affect the bandwidth available to Kiki's smartphone.

(2)

KIKI'S SMARTPHONE WOULD BE MUCH SLOWER WHEN
USING THE INTERNET BECAUSE SHE WOULD BE SHARING IT.



1 mark is awarded for this response as, if taken alone, the phrase 'she would be sharing it' would imply 'sharing bandwidth' (given 'it' is the subject of the question).

Question 1 (e)

Many candidates failed to gain marks for this question because they incorrectly stated 'multifunctional' rather than 'convergence'.

Many candidates declined to offer a response to this question.

Question 1 (f)

Many candidates used the term 'process' and there was a lot of reference to the 'brains of the computer'.

Many students made reference to the speed of the CPU: there seemed to be a general lack of understanding as to the function of the CPU.

(f) The smartphone has a 4 GHz CPU.

Describe the function of a CPU.

(2)
A CPU processes information sent from primary memory (RAM + ROM) and carries out instructions from input devices, which it then displays on output. IT's measured by clock cycles a second



This response gains the first mark for 'Carries out' (implying 'executes') and the second mark for 'instructions'.

Question 1 (g)

Many implied incorrectly that the purpose of application software was to run the smartphone.

(g) The smartphone uses application software.

Describe the purpose of application software.

(2)

Application software are softwares that are ~~not necessarily~~ useful to add more functionality to ~~the~~ a device. Therefore those software have the potential to differentiate the functionalities of a devices. Application software can do many kinds of tasks. E.g. Write letters (Word processing), calculation (spreadsheet) or Graphic softwares (to draw and model images)



In this response, the inclusion of 'write letters' and 'draw' implies a user is involved (the application cannot do this without one).

Marks were awarded for responses that indicated user involvement (e.g. allows 'you' to).

Question 1 (h)

All three mark points were seen, with 'portable' being a common response.

Incorrect answers mentioned more/large space/capacity/memory/information apps. Also faster/quicker speed.

(h) Explain **one** benefit of using solid state storage with a smartphone.

(2)

It does not have any moving parts,
therefore it will not make any noise
when it is storing files.



'Does not have any moving parts' gains a mark, but reference to noise was not rewardable.

Question 2 (a)

Candidates commonly failed to gain marks because they gave a response based on the general, colloquial understanding of the term, mistaking it for a wireless access point.

2 Zara uses her tablet computer to watch TV online.

(a) Describe the function of a router.

(2)

To store all the IP addresses of all the components so it can forward them with the quickest route to avoid network traffic.



This response gained both marks for 'store IP addresses' and 'forward by quickest route'.

Question 2 (b)

Common responses included 'wider variety of content' and 'anytime and anywhere'.

Some responses failed to gain marks as they stated there was no need for TV to download and reference to streaming.

(b) State **two** benefits to Zara of online TV.

(2)

1. She can ^{personalise} ~~customize~~ it more to her needs
→ e.g. watch ~~one~~ ^a show ~~that isn't playing on tv.~~
2. She has a wider range of selection.

e.g. watch ~~a~~ episode that isn't available/
playing on her tv/ can watch it when she wants.



A range of good responses were seen for this question.

For this response, the first mark is gained for "She has a wider range of selection". The second mark is awarded for "can watch it when she wants", as it implies 'always available'.

Question 2 (c)

Most candidates attempted a response but many did not gain marks as they simply described the four stages listed in the image.

'Ransomware' and 'malware' were commonly awarded marks.

The mark for 'encrypt' was often lost when candidates used the term 'locked'.

Responses mentioning incorrectly 'pharming', 'phishing' and 'hacking' were frequently seen. There was also frequent misunderstandings of a trial or subscription having run out and a payment being due. Candidates also gave details of what Zara should do, rather than what has happened.

(c) Zara streams an online video. She sees the notice shown in **Figure 1**.

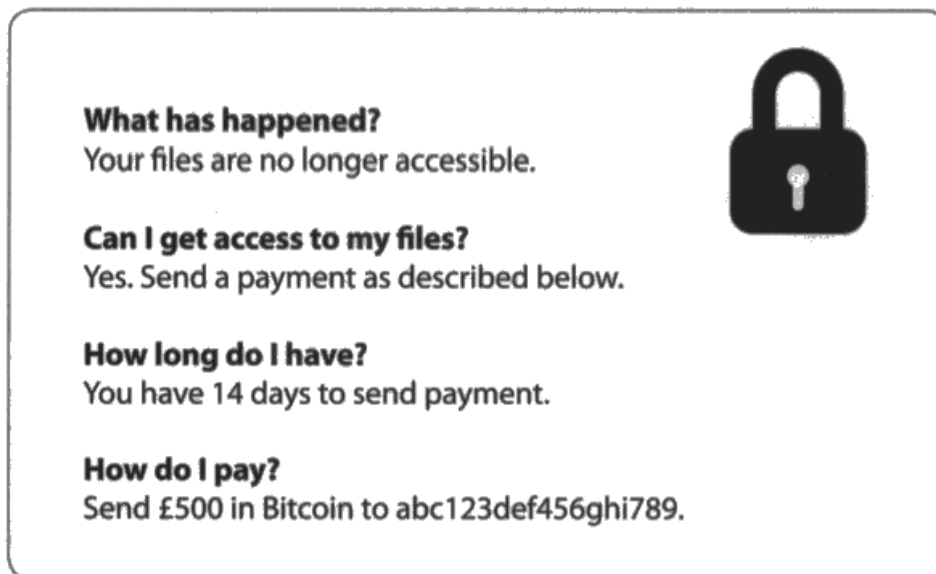


Figure 1

Describe what has happened to Zara.

(4)

Zara's tablet computer has been infected by Ransomware. (As shown by the payment in Bitcoin).

The files on her tablet computer have been encrypted, meaning the attacker has used a key to scramble the data and ~~use the program~~ using a key that Zara doesn't have. Once the payment is made, the attacker/Hacker could provide her with the necessary key to unscramble her data.



This response gained all four marks

Question 2 (d)

Marks were frequently awarded for mentioning that the TV screen was bigger and had a better resolution.

(d) Give **two** benefits to Zara of connecting her tablet computer to her television.

(2)

1 She can watch ~~the~~ the video on a larger screen so less straining.

2 It is more convenient.



'Bigger screen' gains a mark. 'Less straining' is enough for a second mark (from mark point 3)

Question 2 (e)

Candidates were often able to name more than three methods of preventing unauthorised access to the data. However, there were quite a few responses including 'Firewall', which was not rewardable.

(e) Zara uses a PIN to unlock her tablet computer.

List **three other** methods she could use to prevent unauthorised access to her data.

(3)

1 Face recognition

2 Password (Similar to a pin but more complex thus safer)

3 Biometric Scanner: / ~~Apprent scanner~~ / Fingerprint Scanner



One mark each was awarded for 'Face recognition' and 'Password'. 'Biometric scanner' cannot be awarded as a mark for a biometric method has already been given. However on the same line is 'fingerprint', which was awarded.

Question 2 (f)

Marks were not awarded for reference to phones or the concept of accessibility anywhere.

(f) Explain **one** advantage of using hosted applications with tablet computers.

(2)

One Advantage of using hosted application
is that it's being hosted on another
device so it doesn't have to be installed
taking up storage.



Both marks awarded for 'doesn't have to be installed' (1)
and 'taking up storage' (1).

Question 2 (g)

A good range of correct responses were seen, although there were a few candidates who declined to respond. Of those who failed to gain marks, responses often referred to 'cost', 'security' and 'lack of viruses'.

(g) Explain **one** advantage of using locally installed applications.

(2)

They are already installed
and can work without
internet. You can work
everywhere without internet.



'Work everywhere'(1) and 'without internet' (1) were both rewarded in this response.

Question 3 (b) (i)

Candidates often mentioned speed, amount of data, range, capacity, Health and Safety issues and bandwidth; none of which are relevant to the context of the question.

Some responses gained a mark for referring to 'line of sight'. Very few made the connection to the context of the question to gain both marks.

(b) The health monitor uses Bluetooth to transfer data to the smartwatch.

(i) Explain why Bluetooth rather than infrared is used for this transfer.

(2)

Infrared ^{signal} can't pass through for
example clothing or bags.
Bluetooth doing it easyle.



'Can't pass through clothing' refers to the need for infrared to have line of sight, so gains a mark.

However, this response is typical in that it does not go on to relate this explanation to the context of the question.

Question 3 (b) (ii)

Marks were often not awarded for responses that gave generic answers referring to 'stronger connection' or a comment on the size of the file.

(ii) Give **two** factors that might affect the speed of the transfer.

(2)

- 1 Bandwidth may affect how much data could travel at the time so could limit the speed of the transfer.
- 2 Distance between the 2 devices. Bluetooth is short distance but if devices were outside of a range (10metres) it can slow down speed of transfer.



This response gains both marks for mentioning 'bandwidth' and 'distance'.

Question 3 (c)

Marks were often gained for responses mentioning 'scrambling the data, so that it cannot be understood without a key'.

(c) Some data needs to be encrypted when it is transferred.

Describe how encryption helps keep data secure.

(2)

Encryption scrambles ~~do~~ the data making it unreadable to the peoples who don't ~~also~~ have a key (e.g. a password). Therefore it ~~make~~ reduces the risks for ~~data~~ data being stolen/~~viewed~~ viewed/abused by unwanted people.



This response gained both marks for 'scrambles the data' and 'making it unreadable'.

Also 'to the people who don't have a key' implies a key is needed (but both marks had already been awarded).

Question 3 (d)

Common responses that gained marks included 'time taken to reach destination', 'steps taken to reach destination' and 'quickest route'.

Many candidates failed to gain marks because they responded with reference to calculating their location or the location of the device.

(d) Ruwan's smartwatch uses GPS to monitor his location.

Give **two** pieces of information that could be calculated using GPS data.

(2)

- 1 the location he is heading towards
updated by the system
- 2 the minutes it would take for him to reach
his location.



This response gained both marks for 'location he is heading towards' and reference in the second part of the response to 'time to destination' (benefit of the doubt was given here).

Question 3 (e)

Candidates gained full marks for this question by showing understanding of how location is shared and what the consequences could be.

Many candidates gained a mark for showing understanding that GPS would share location, but the second mark was sometimes a repeat of the question, simply mentioning 'risk'.

(e) Some social networking services use GPS data.

Describe how the use of GPS data could place social network users at risk.

** It makes it so anybody⁽²⁾ could know where you are, this could lead to abduction etc...*



Two marks gained for linking 'anybody could know where you are' to 'lead to abduction'.

Question 3 (f)

There was some confusion from candidates between MiB and MB. As this is the first sitting of the paper, candidates were awarded marks for responses referring to MB (1000) rather than MiB (1024).

Centres are advised that, in future series, this will not be the case. Please ensure candidates are prepared for assessment of the most recent version of the specification, which can be downloaded from the Pearson qualifications website.

(f) The health monitor stores 4 MiB of data.

Construct an expression to show how many bits are in 4 MiB.

(3)

$$\begin{aligned} &= \frac{4}{1024} = 4 \times 1024 = 4096 \\ &4096 \times 1024 = 4194304 \\ &4194304 \times 8 \\ &= 33554432 \text{ bits.} \end{aligned}$$



This would have gained all three marks even without the right answer.

Question 3 (g)

Many candidates gained marks from this question. Responses relating to advertising through social media were common. Customer benefits and access to a global workforce were also described.

Where candidates failed to gain marks, it was often for responses that incorrectly referred to profit.

(g) Ruwan purchased his smartwatch online.

Describe **two** ways in which the Internet can impact positively on companies that sell goods.

(4)

- 1 More sales as there ~~are~~ may be places in which consumers could not access shop and now can through the internet ~~to~~ thus increasing sales.
- 2 Less cost on maintaining physical stores as they can run their goods business online which can be accessed anywhere with an internet connection available.



This response gained all four marks.

The first part of the response gained two marks for referring to increasing consumers (as the response refers to the fact that consumers could not gain access before) and are now able to access from places in which were previously inaccessible.

The second part of the response gains a further two marks as it links less cost to maintaining physical stores.

Question 4 (a) (i)

Where marks were gained, it was often for describing bias well as one-sided or prejudiced.

Many candidates incorrectly provided responses related to sporting activities. For example, for 'age', there were a lot of responses referring to the age of the user rather than the age of the information.

Very few marks were awarded for 'reliability' with very few responses mentioning the comparison of information.

4 Ruwan searches online for local sporting events.

(a) Ruwan evaluates the fitness for purpose of the search results.

(i) Complete this table to show how each property can **negatively** affect the fitness for purpose of information.

(3)

Property	Negative effect
Bias	It makes only certain results show up, leaning towards one thing rather than considering all the possibilities.
Age	Only showing information for a specific age group excludes the other age groups. i.e. old people receive results targetting teenagers.
Reliability	Some sources are not reliable making information that can be false and inconsistent.



A mark is gained for 'Not considering all the possibilities' in the 'Bias' section. Responses relating to age group were common incorrect responses for the 'Age' section. 'Inconsistent' was enough to gain a mark for the 'Reliability' section.

Question 4 (b)

Responses often mentioned the need to consider keywords, but frequently did not refer to the relevance of keywords.

For relevant, 'accurate' was often seen. For irrelevant, 'wrong' was frequently offered.

(b) Explain why Ruwan must consider his use of keywords when using a search engine.

(2)

A search engine analyses searches matching keywords, ^{in the search} to keywords related to websites. By correct use of keywords and syntaxes, Ruwan can increase his chances of finding a more relevant website.



This response gains both marks as it mentions matching keywords to websites.

Question 4 (c)

Candidates frequently mentioned entering different keywords, even though the question stated that Zara had entered the same term.

Others failed to gain marks because they stated that she was at a different location.

516" Instead of "rock", in order to find the music option.

(c) Zara enters the same search term as Ruwan but receives different results.

Explain why Zara receives different results.

(2)

The results may be affected by different factors. For example, if filters are used, some results will be hidden by the browser. It also depends by the ~~location~~ type of browser used. Some browser (for political, religious reasons) in some countries censor some contents.



This is an example of a response that gained both marks.

Question 4 (e)

Many candidates gained marks for stating that MAC addresses are unique, but responses did not always mention that the firewall checks addresses against whitelists/blacklists.

(e) Describe how MAC addresses can be used to prevent access to networks.

(3)

MAC addresses are unique to every every device and cannot be changed. The devices can be identified on a network through their MAC addresses and can be restricted access. Firewall can be used to prevent certain MAC addresses from joining/entering the network.



The first mark from this response was gained for 'MAC addresses are unique to every device'.

'Identified' is not enough for 'checked' and 'restricted access' is a repeat of the question.

The second mark was awarded for 'Firewall can be used'.

Question 4 (f)

Candidates failed to gain marks from the higher mark bands when they listed what the services can do and the causes of the gap, rather than the **impact** on the gap.

Of those who gained marks from the lower bands, many described general Internet access rather than cloud services.

A common misconception surrounded the use of the words 'rich' and 'poor' and candidates often related these to economics rather than technology.

- (f) Analyse how the use of cloud-based services has impacted on the gap between the information rich and the information poor.

digital divide

(8)

The information rich are based in developed countries, which have the money to build, research and facilitate information to citizens, while developing countries lack the time and priority for it, instead focusing on healthcare and raw material production, hence the gap.

The innovation of the internet in developed countries has led to cloud-based services, where users can access all the information they want at any time of the day, anywhere in reach of the network. People are then able to get educated more easily, earn higher marks on tests, develop their skills and therefore get higher spots on jobs, like working at Google headquarters.

As the information poor may have little to no access to the internet, they will not be able to get a free/cheap education, and may stay in the same condition for the rest of their lives, while the information rich get the privilege to prove themselves and move forward. This is called the digital divide, and ~~to~~ only the gap is only getting wider by the day as there are constant advancements in technology and the ability to update information and discuss issues in forums and shared data.



This response provides elements of knowledge about uses of cloud-based services, given at the end of the response.

There are links between the causes of the gap and the services, but not on how the services impact on the gap. There is, therefore, no mention of the impact of the services on the widening or narrowing of the gap, so this does not meet the Level 3 descriptor. It meets the descriptor for top of Level 2 and was awarded 5 marks.

Question 5 (a)

The majority of responses gained the mark by stating 'The Internet'.

Where responses failed to gain marks, it was often for stating 'World Wide Web', or 'Wi-Fi'.

5 James teaches in a school that uses a local area network and a wide area network.

(a) Give **one** example of a wide area network.

(1)

Internet



This is a typical response gaining one mark.

Question 5 (b)

Few candidates gained marks from this question.

Common correct responses related to braille keyboards.

Many candidates provided responses related to general peripherals (such as mice, speakers and microphones), thereby limiting access to marks.

(b) Some learners have accessibility needs.

Complete the table to describe how **two** peripheral devices designed **specifically** for accessibility could improve the learning of people with accessibility needs.

(4)

Peripheral device designed specifically for accessibility	How it supports accessibility needs
1 A reading pen	if some one cant read very well then they can have a pen which helps them and reads the text to them
2 computer	for some one that cant write the neatest. So that the teacher can understand the students work



The first part of this response gains two marks.

The second part of the response is typical of candidate work that was too generic and not focussing on the requirement of the question, which was emboldened to ensure candidates were aware they should answer in context.

Question 5 (c)

Responses often referred to benefits to students and/or benefits from using technology rather than a network.

(c) Describe **two** benefits to teachers of using a local area network.

(4)

1. Shared hardware: Using a LAN helps prevents them from buying hardware devices (like printers) for each and every computer. Only one printer can be bought and this saves money.
2. Central management: All backup and storage are managed from a central point. For example; when backing up, the document can only be backed up from the ~~central~~ central server, instead of doing that on every individual computer.



The reference, in the first part of the response, to 'only one printer' was enough to allow a mark for reference to sharing.

A second mark was given for the expansion to this: 'saves money'.

The second part of the response gains a further two marks for reference to central backup and management and then the expansion of these about tasks not needing to be done on each individual device.

Question 5 (d)

Common errors included mentioning alternative backup media rather than processes, reference to cloud backup, or repeating 'incremental' (which was not awardable as it was given as the example in the question).

(d) One type of backup procedure the school could use is incremental backup.

State **one other** backup procedure the school could use to secure its data.

(1)

differential backup



A typical response that gained the mark.

Question 5 (e)

Candidates did not demonstrate a sound understanding of the nature of acceptable use policies (even though presumably they were taught these as part of their use of systems in the centre).

Common incorrect responses included those related to data protection, copyright, misuse of equipment and software from a supplier's point of view.

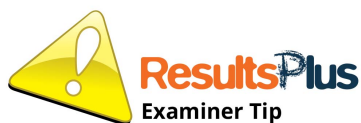
(e) Explain the purpose of an acceptable use policy.

(3)

An acceptable use policy shows a user what they can or cannot do on a network. It shows what could happen if a user breaks the policy and how it may be enforced. It also gives a company proof that if you break the policy, you previously agreed not to.



This response gained two marks. The first mark was for implying rules. The second mark was given for reference to the consequences if a user breaks a policy.



Study the policies available in your centre so that candidates can relate their responses to a realistic and tangible document.

Question 5 (f)

Many responses related to sharing files, or sharing information.

Candidates sometimes failed to gain marks as they used 'to communicate' as a verb in their response.

(f) The learners use communication software.

Describe the purpose of communication software.

(2)

Communication software is a software designed particularly to communicate, share ideas, data, files to other individuals.



Both marks were gained in this response for 'exchange' (1) and 'files' (1).

Question 5 (g)

Many responses focussed on the positive aspects with common positive aspects being 'fact checking' by moderators and the ability to use the referencing facilities.

When candidates failed to gain marks, it was often because their responses related to features of VLEs, rather than their impact; or simply referred to the impact of Internet access rather focussing on VLEs as required by the question.

Negative aspects focussed on health and safety usage of computers in general. One common misconception was reference to virtual reality and simulations.

(g) Discuss the impact of VLEs on learners.

(8)

The Virtual Learning Environment is a great tool to help learners throughout their studies. It gives access to a big span of functions, such as:

1. Giving the learners the access to their homework or tasks online, so it can be accessed from any device at any place of the world, which makes the learning more mobile and effective.
2. It gives the learners an opportunity to cooperate in their tasks with their classmates, so if there was a group project that needed to be done, it could be accepted by a group of users on a VLE.
3. The VLE increases the contact between a teacher and a student. For example, if a student has struggles in a task he can ask for help from his tutor, and ~~he~~ ^{the teacher} will be able to send him help throughout the VLE as a note file, or a useful learning video, etc.

* However, some of the students might become used to a VLE, which makes them reluctant to work with paper tasks without using the internet. Also, by continuous using of a computer to enter a VLE, the health of students such as eyesight or back problems might ~~even~~ suffer.

In conclusion, I would say that VLE has a positive impact on learners, as it gives access to loads of learning materials, as well as increases the communication between learners and teachers.

(Total for Question 5 = 23 marks)



This response includes a range of points, with most supported by examples. It considers both sides and mostly, but not always (for example the section related to health and safety) link clearly to the scenario.

This is a Level 3 response, but due to the lack of clear linkage to the scenario throughout, was awarded 7 marks.

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

Grade Boundaries

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