Examiners' Report

Principal Examiner Feedback

Summer 2024

Pearson Edexcel International Advanced Level in Information Technology (WIT11/ 01)

Unit 1

Paper WIT11/01

Contents

Introduction 4
Interpreting words used in the questions 4
Subject-specific terminology 4
Subject-specific notation 4
Drawing 4
Q01ai 5
Q01aii 5
Q01b 7
Q01ci 9
Q01cii 11
Q01di 12
Q01dii 13
Q02a 14
Q02b 16
Q02c 19
Q02d 22
Q03ai 24
Q03aii 26
Q03bi 28
Q03bii 29
Q03c 31
Q03d 33
Q04a 36
Q04b 38
Q04c 40
Q04d 42
Q05ai 46
Q05aii 48
Q05b 49
Summary 54

Introduction

This is the third full live series for this unit of the IAL IT. The first was in 2019, with years 2020, 2021, and 2022 being disrupted due to Covid19. The 2023 series was the first after Covid19.

Interpreting words used in the questions

The command taxonomy, available in the specification appendix 6, details the requirements for responses to both the command word **explain** and the command word **describe**. These command words are most often seen in questions worth two marks. The first mark is for a statement. The second mark is for a development of that statement (describe) or a justification of that statement (explain). The statement and the expansion must be linked and make sense together.

In the summer, responses were often seen for these questions that could only be awarded a single mark, as the development or justification was missing. The mark schemes for Q03aii and Q04c demonstrates patterns for responses to an explain question that achieve both marks.

In some questions, the command word **describe** is used where the response is a description of a process. These questions may be worth more than two marks. Each mark is a step in the process.

The words used in the questions should help students identify what is required in the response. There is a difference between characteristics (what something is), functionality (what it does), affordability (what it allows you to do), and its benefits or drawbacks (why you would/would not use it). Q03c asks for a benefit of a smart city, in the context of a bookstore, rather than what a smart city or a bookstore is.

Subject-specific terminology

Across all the questions, there was a tendency to omit the use of subject-specific terms or to confuse some words with others. Responses often were general and high-level where the use of a subject-specific term would have more clearly demonstrated knowledge and understanding.

Subject-specific notation

Many responses demonstrated accurate use of flowchart notation. This is much improved on last year. However, many responses struggled to demonstrate accurate use of dataflow symbols.

Drawing

All of the questions requiring drawing include explicit instructions for the requirements in the question. Q02c requires completion of a diagram by adding labelled lines. However, a number of responses omitted the labels. Q04e requires completion of a dataflow diagram by adding data stores and labelled data flows. However, a number of responses added new processes and data flows between them.

Essays

Essays are marked using levels-based mark schemes. The contents and information provided in the essays should be technically accurate. The length of the essay is not necessarily related to the awarded mark. For all essays, it is possible to achieve full marks using no more than the space provided in the question paper. Long, rambling essays that include vague or inaccurate information are awarded no more marks than shorter, accurate, and more concise essays.

Q01ai

This question required identification of a type of storage suitable for a specific situation.

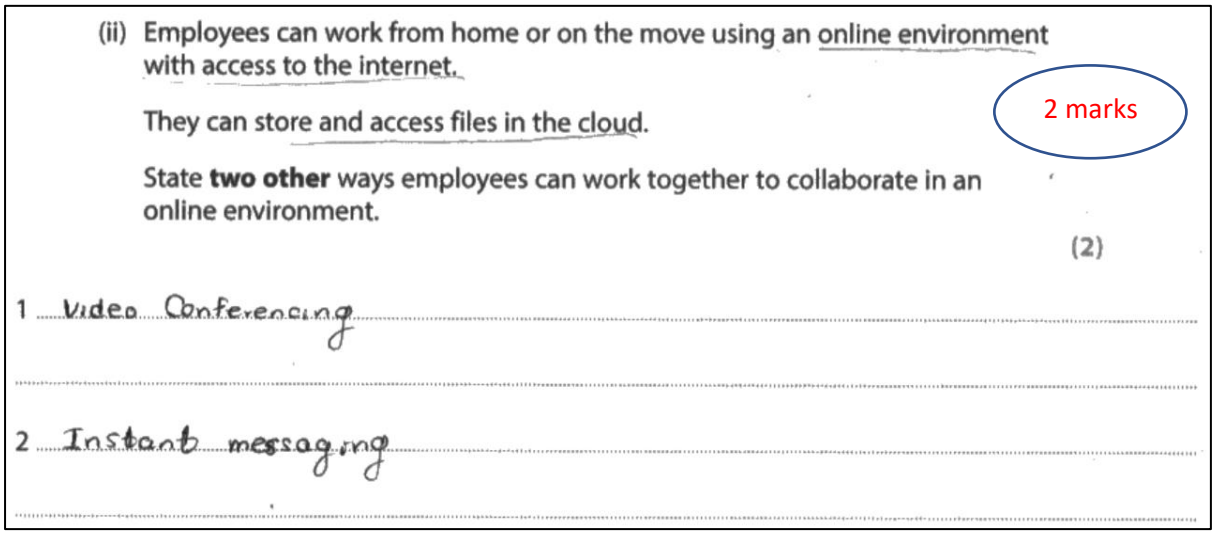
Many responses recognised that network-attached storage was required.

Q01aii

This question asks about working in online environments.

Examiners saw many good responses that identified two different ways of working collaboratively.

Vague responses did not gain both marks. Trademarked product names alone cannot be awarded, but were used as clarification in some responses.



(ii) Employees can work from home or on the move using an online environment with access to the internet.

They can store and access files in the cloud.

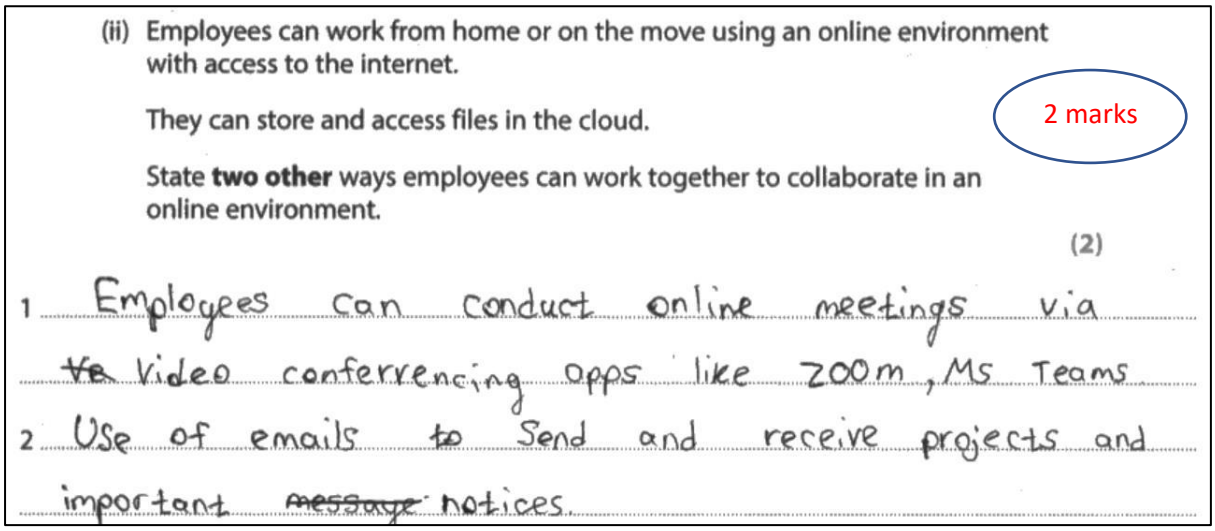
2 marks

State **two other** ways employees can work together to collaborate in an online environment.

(2)

1 Video Conferencing

2 Instant messaging



(ii) Employees can work from home or on the move using an online environment with access to the internet.

They can store and access files in the cloud.

2 marks

State **two other** ways employees can work together to collaborate in an online environment.

(2)

1 Employees can conduct online meetings via ~~ve~~ video conferrencing apps like Zoom, MS Teams

2 Use of emails ~~to~~ Send and receive projects and important ~~message~~ notices.

(ii) Employees can work from home or on the move using an online environment with access to the internet.

They can store and access files in the cloud.

State **two other** ways employees can work together to collaborate in an online environment.

(2)

1 They can host meetings together and discuss with each other

2 They can access information from the Internet.

1 mark

(ii) Employees can work from home or on the move using an online environment with access to the internet.

They can store and access files in the cloud.

State **two other** ways employees can work together to collaborate in an online environment.

(2)

1 Work with a global Community

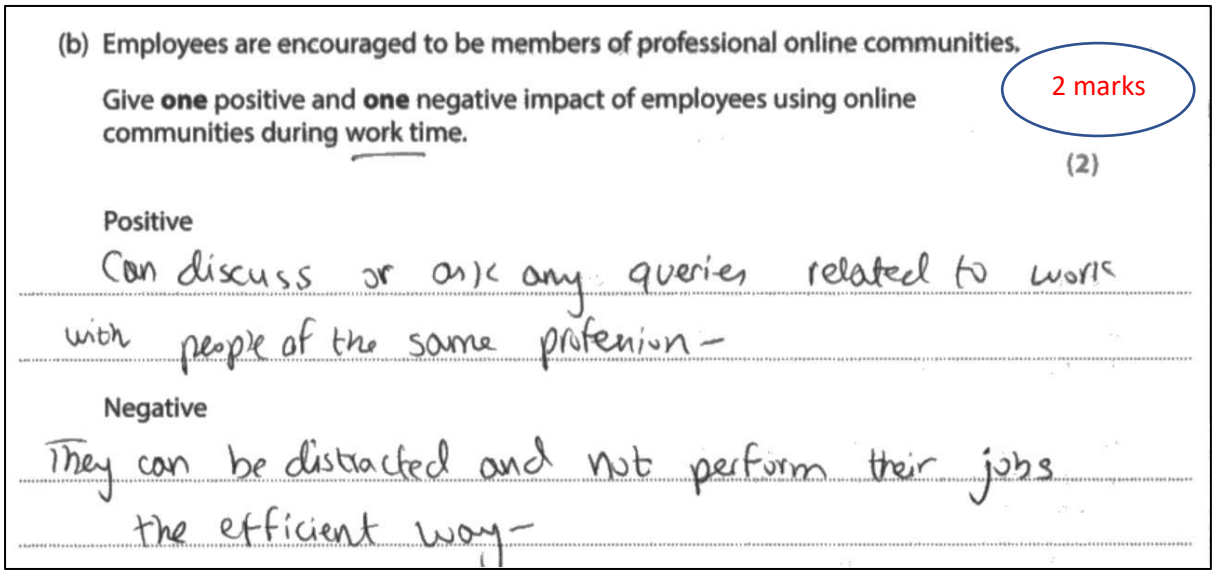
2 Direct accsess to Coustomer making it easier to obtain their feed back

0 marks

Q01b

This question requires an understanding of the benefits and drawbacks of using online professional communities.

Responses were awarded that focused on work, productivity, efficiency, and effectiveness.



(b) Employees are encouraged to be members of professional online communities.

Give **one** positive and **one** negative impact of employees using online communities during work time.

2 marks

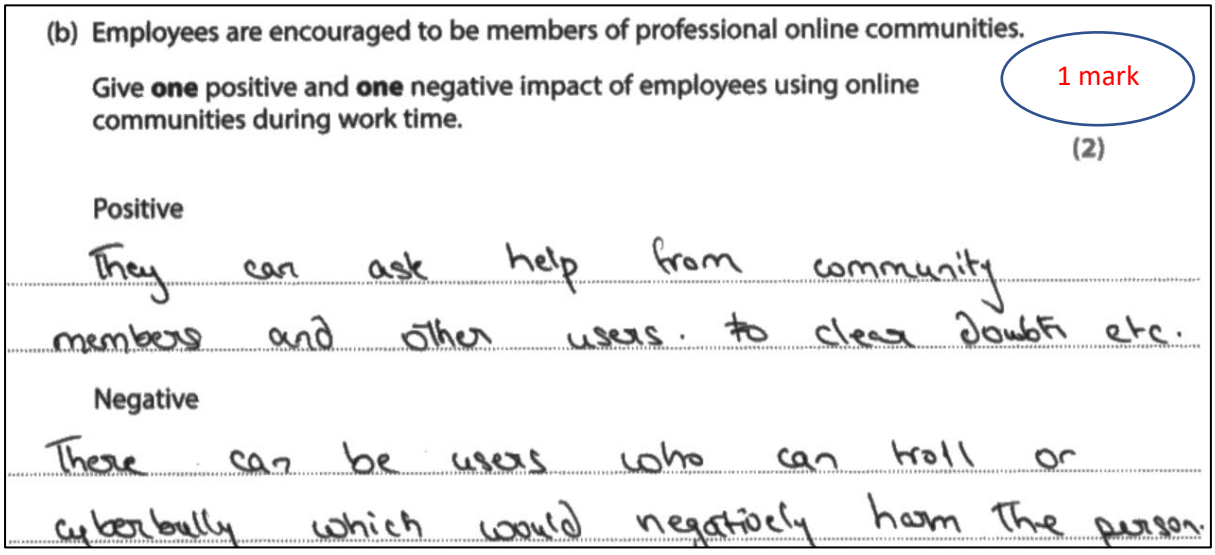
(2)

Positive

Can discuss or ask any queries related to work with people of the same profession –

Negative

They can be distracted and not perform their jobs the efficient way –



(b) Employees are encouraged to be members of professional online communities.

Give **one** positive and **one** negative impact of employees using online communities during work time.

1 mark

(2)

Positive

They can ask help from community members and other users. to clear doubts etc.

Negative

There can be users who can troll or cyberbully which would negatively harm the person.

(b) Employees are encouraged to be members of professional online communities.

Give **one** positive and **one** negative impact of employees using online communities during work time.

0 marks

(2)

Positive

They can have more time to spend with family as hours are flexible

Negative

lack of face-to-face interaction can cause ~~prob~~ communication barriers between employee

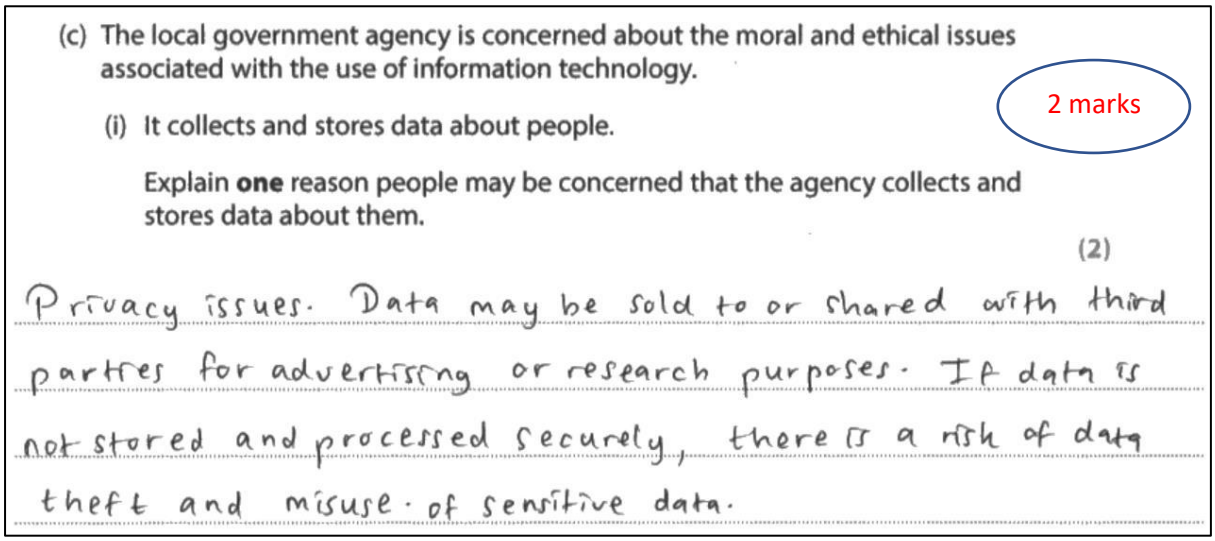
Q01ci

This question required an explanation of an ethical issue associated with data collection.

Examiners saw many responses that identified bad things that could happen as a result of hacking. They were not always awardable, as they lacked identification of a specific concern and a linked explanation based on what the agency did or did not do to allow it to happen.

The most common concern cited was privacy. The most common linked expansion was based on storing the data insecurely.

Responses that did not provide a linked expansion could not be awarded both marks.



(c) The local government agency is concerned about the moral and ethical issues associated with the use of information technology.

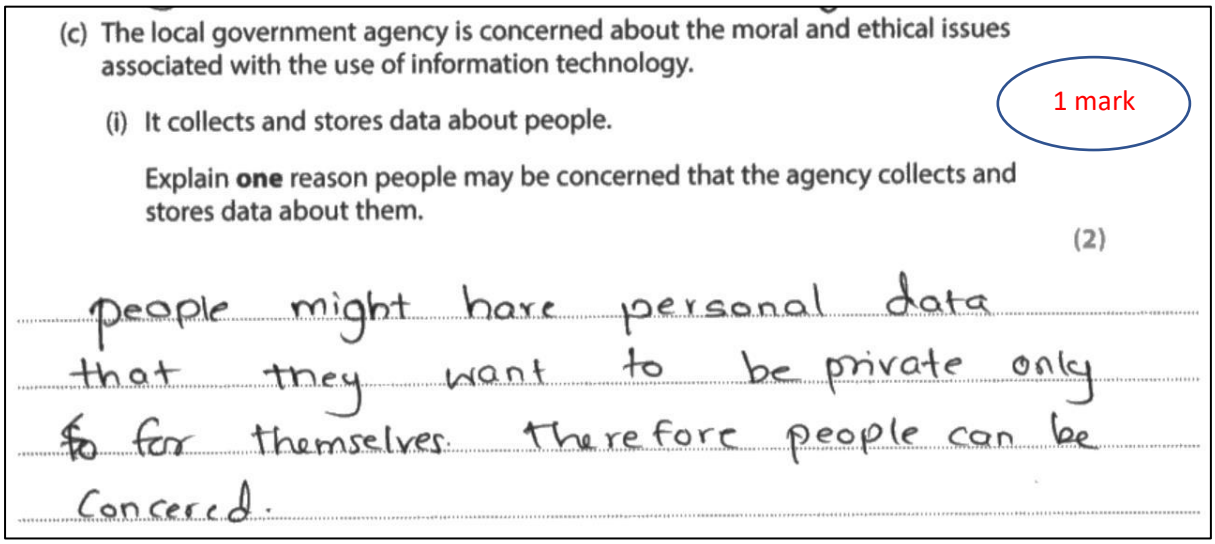
(i) It collects and stores data about people.

Explain **one** reason people may be concerned that the agency collects and stores data about them.

(2)

2 marks

Privacy issues. Data may be sold to or shared with third parties for advertising or research purposes. If data is not stored and processed securely, there is a risk of data theft and misuse of sensitive data.



(c) The local government agency is concerned about the moral and ethical issues associated with the use of information technology.

(i) It collects and stores data about people.

Explain **one** reason people may be concerned that the agency collects and stores data about them.

(2)

1 mark

people might have personal data that they want to be private only to for themselves. Therefore people can be Concered.

(c) The local government agency is concerned about the moral and ethical issues associated with the use of information technology.

0 marks

(i) It collects and stores data about people.

Explain **one** reason people may be concerned that the agency collects and stores data about them.

(2)

• Because they can also access other information in ~~the~~ people's devices.

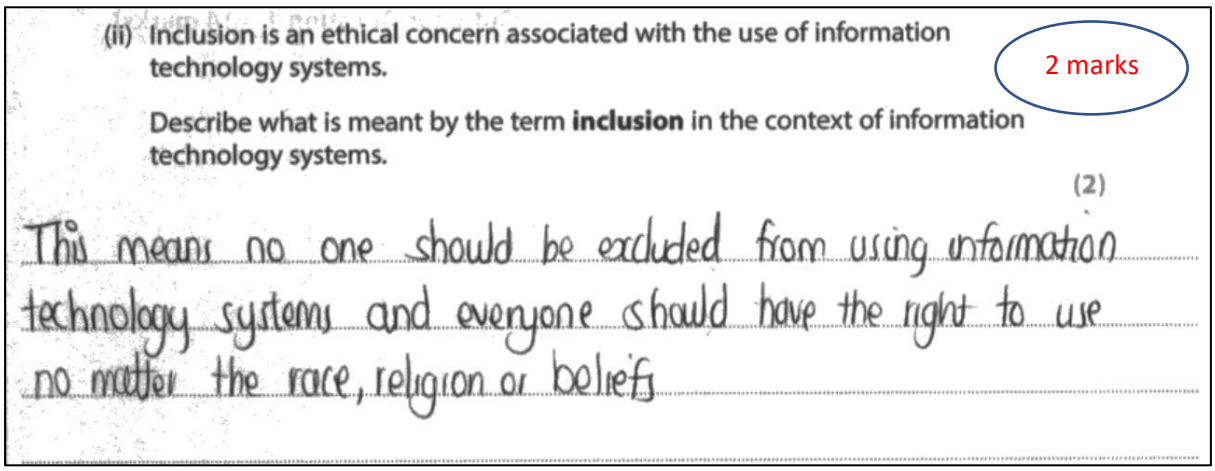
•

Q01cii

This question required a definition of the term inclusion.

Consent was the most frequent incorrect response.

Responses that did not provide a linked description could not be awarded both marks.



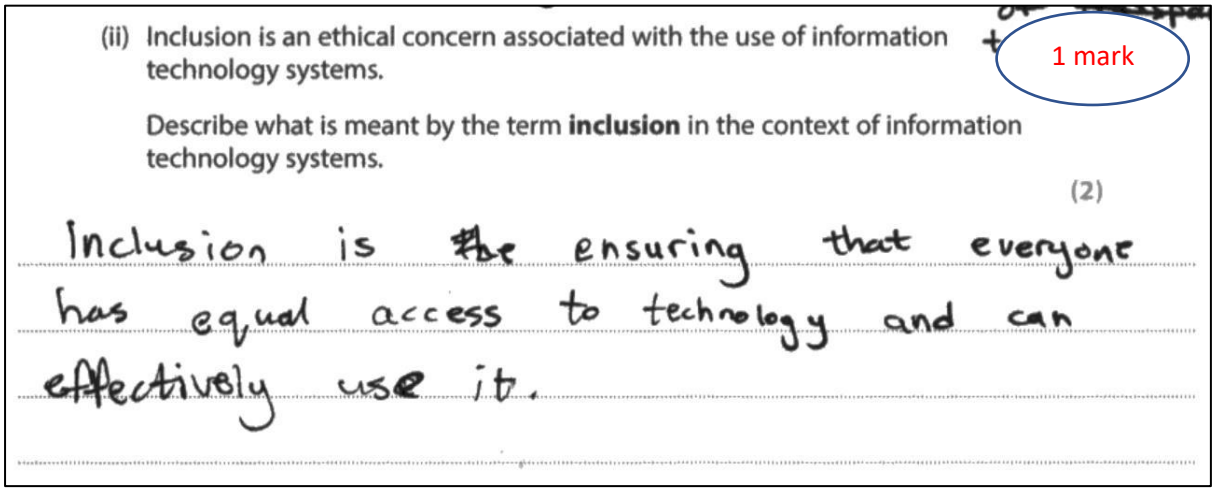
(ii) Inclusion is an ethical concern associated with the use of information technology systems.

Describe what is meant by the term **inclusion** in the context of information technology systems.

(2)

2 marks

This means no one should be excluded from using information technology systems and everyone should have the right to use no matter the race, religion or beliefs



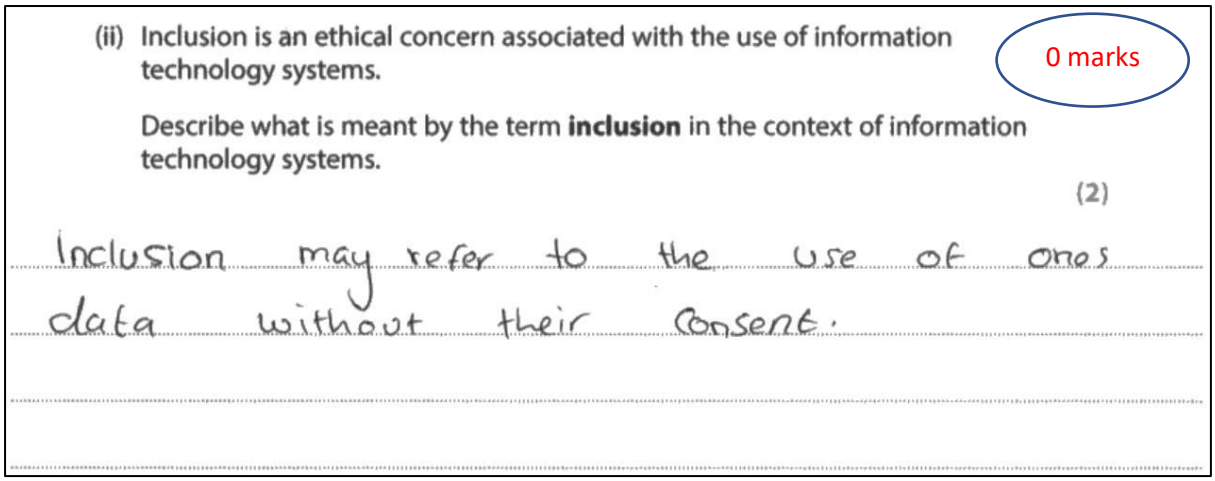
(ii) Inclusion is an ethical concern associated with the use of information technology systems.

Describe what is meant by the term **inclusion** in the context of information technology systems.

(2)

1 mark

Inclusion is the ensuring that everyone has equal access to technology and can effectively use it.



(ii) Inclusion is an ethical concern associated with the use of information technology systems.

Describe what is meant by the term **inclusion** in the context of information technology systems.

(2)

0 marks

Inclusion may refer to the use of ones data without their consent.

Q01di

This question required knowledge of the subject-specific terminology associated with measuring network performance.

Examiners saw many good responses, often awarding full marks for this question.

Packet loss was often given instead of error rate. Speed was often given instead of bandwidth.

(d) The local government agency uses the internet and the world wide web to carry out its business.

(i) Complete the table to identify the network metric described in the first column.

3 marks

(4)

Description	Network metric
A measure of the number of bits that are transferred incorrectly	~~Jittering~~
The time delay between a data packet leaving the source device and arriving at the destination	Latency
A measure of the capacity of a communications channel	Bardwith
The variation in times between packets arriving at the destination	~~Jit~~ Jittering

(d) The local government agency uses the internet and the world wide web to carry out its business.

(i) Complete the table to identify the network metric described in the first column.

2 marks

(4)

Description	Network metric
A measure of the number of bits that are transferred incorrectly	Packet(s) / Packet loss
The time delay between a data packet leaving the source device and arriving at the destination	Latency
A measure of the capacity of a communications channel	Bandwith
The variation in times between packets arriving at the destination	Ping

(d) The local government agency uses the internet and the world wide web to carry out its business.

(i) Complete the table to identify the network metric described in the first column.

1 mark

(4)

Description	Network metric
A measure of the number of bits that are transferred incorrectly	Bitrate
The time delay between a data packet leaving the source device and arriving at the destination	Packet loss
A measure of the capacity of a communications channel	bandwidth
The variation in times between packets arriving at the destination	

Q01dii

Many responses recognised URLs as a feature of the World Wide Web.

Q02a

Examiners saw a wide variety of responses for this question about encryption.

Some responses repeated the words already given in the question, such as public, private, and shared, rather than using accurate subject-specific terminology.

2 Organisations connect devices to networks.

Networks are protected by a variety of security measures.

2 marks

(a) Complete the table to identify the encryption technique that matches each description.

(2)

Description	Encryption technique
The sender and the receiver use a shared key to encrypt and decrypt a message.	Symmetric encryption
The sender uses a public key to encrypt a message. The receiver uses a private key to decrypt the message.	Asymmetric encryption

2 Organisations connect devices to networks.

Networks are protected by a variety of security measures.

1 mark

(a) Complete the table to identify the encryption technique that matches each description.

(2)

Description	Encryption technique
The sender and the receiver use a shared key to encrypt and decrypt a message.	Symmetric Encryption
The sender uses a public key to encrypt a message. The receiver uses a private key to decrypt the message.	End-to-End Encryption

2 Organisations connect devices to networks.

Networks are protected by a variety of security measures.

0 marks

(a) Complete the table to identify the encryption technique that matches each description.

(2)

Description	Encryption technique
The sender and the receiver use a shared key to encrypt and decrypt a message.	Peer - Peer (Public)
The sender uses a public key to encrypt a message. The receiver uses a private key to decrypt the message.	Client - server (Private)

Q02b

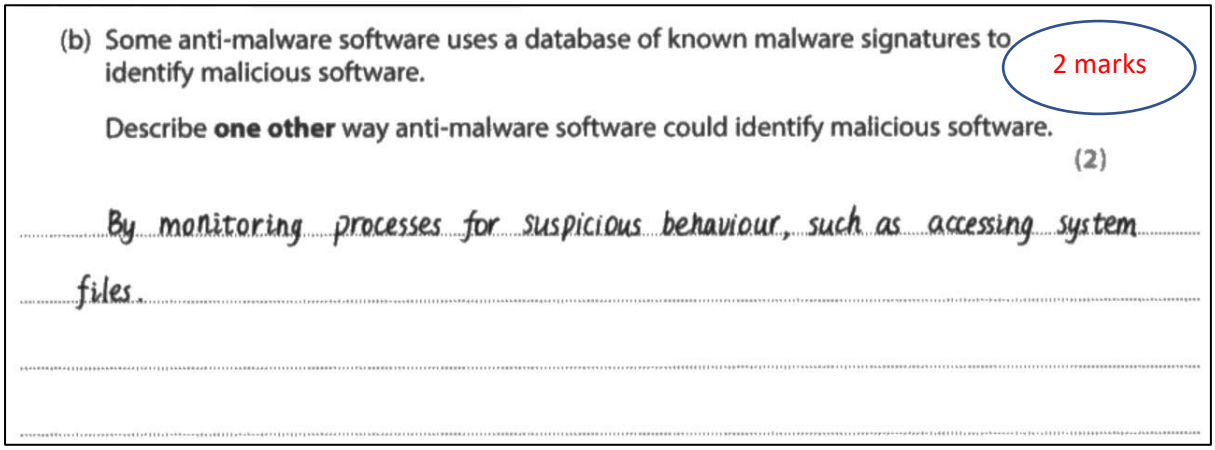
This question asks about the different ways that anti-malware software works.

Examiners saw a variety of responses to this question.

Some responses confused heuristic detection with signature file-based detection. Other responses confused anti-malware detection with a firewall.

Many responses described observing behaviours of executing software to identify malware. Some responses connected running programs with malicious behaviours. Both of these were awarded marks.

Few responses used the correct subject-specific terminology of heuristic detection.



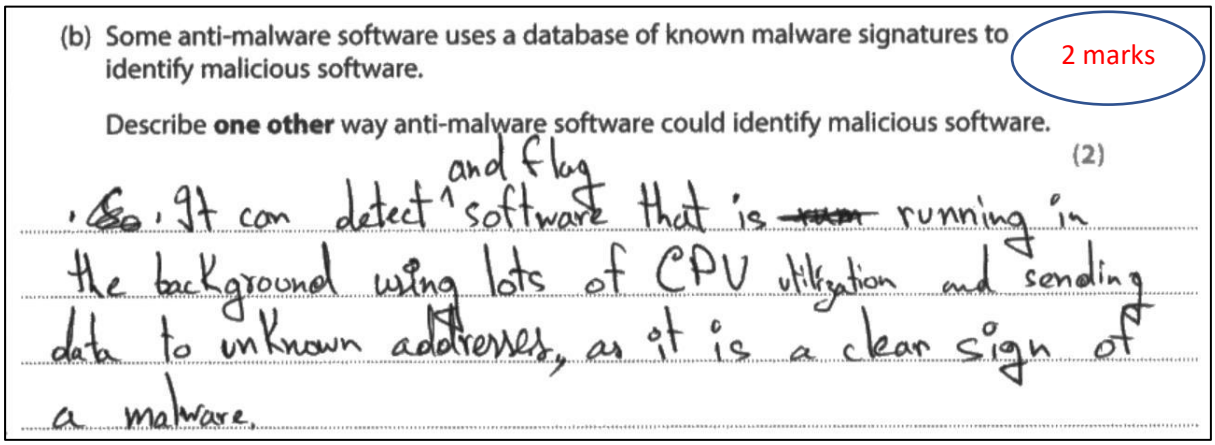
(b) Some anti-malware software uses a database of known malware signatures to identify malicious software.

2 marks

Describe **one other** way anti-malware software could identify malicious software.

(2)

By monitoring processes for suspicious behaviour, such as accessing system files.



(b) Some anti-malware software uses a database of known malware signatures to identify malicious software.

2 marks

Describe **one other** way anti-malware software could identify malicious software.

(2)

It can detect software that is running in the background using lots of CPU utilisation and sending data to unknown addresses and flag, as it is a clear sign of a malware.

(b) Some anti-malware software uses a database of known malware signatures to identify malicious software.

Describe **one other** way anti-malware software could identify malicious software.

2 marks

The anti-malware software could use heuristics to check the activity of the software to identify them as malicious software.

(b) Some anti-malware software uses a database of known malware signatures to identify malicious software.

1 mark

Describe **one other** way anti-malware software could identify malicious software.

(2)

Anti-malware software can identify malicious software according to its behaviour and characteristics. If the software doesn't provide the actual service and slows down computer activities, anti-malware software guarantine these software programs.

(b) Some anti-malware software uses a database of known malware signatures to identify malicious software.

0 marks

Describe **one other** way anti-malware software could identify malicious software.

(2)

- Through error checking of files, to see if the files being sent are altered and corrupted by malware along the way
- By using firewalls, check to see if ~~the~~ the data being transmitted meets the requirements and protocols demanded by the firewall, if it doesn't likely to be malware

Q02c

Examiners awarded the full range of marks for responses to this question.

Some responses confused protocol (Wi-Fi) with media type (air, optical fibre).

A few responses were awarded zero marks. The most common reason for this was the lack of labels provided for the connecting lines. The question, in this case, clearly states a single line and a label are required between devices.

(c) The first floor of a building has a meeting room, a break room and a server room.

Wireless connectivity is available in the meeting room, but not in the break room.

The printer does not support a wireless connection.

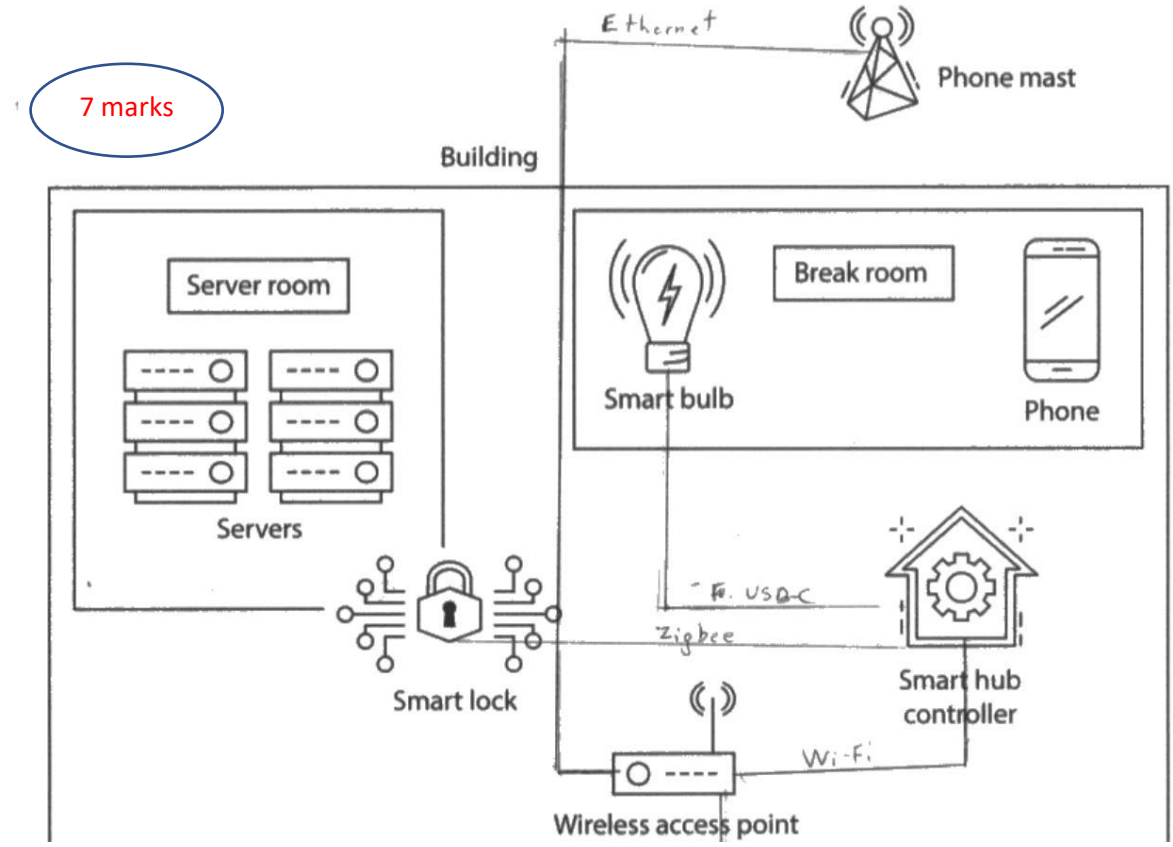
The devices use a variety of connectivity protocols.

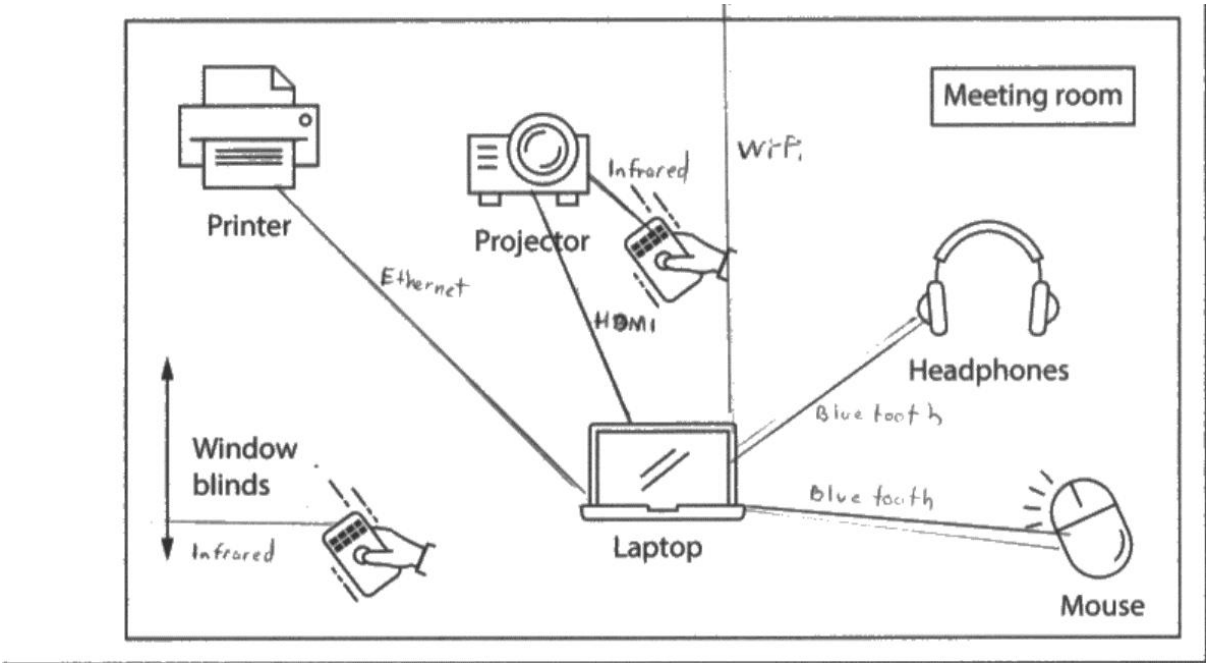
Complete the diagram on the next page by adding:

- a single line between devices that communicate with each other
- a label on the line stating the network communication protocol used.

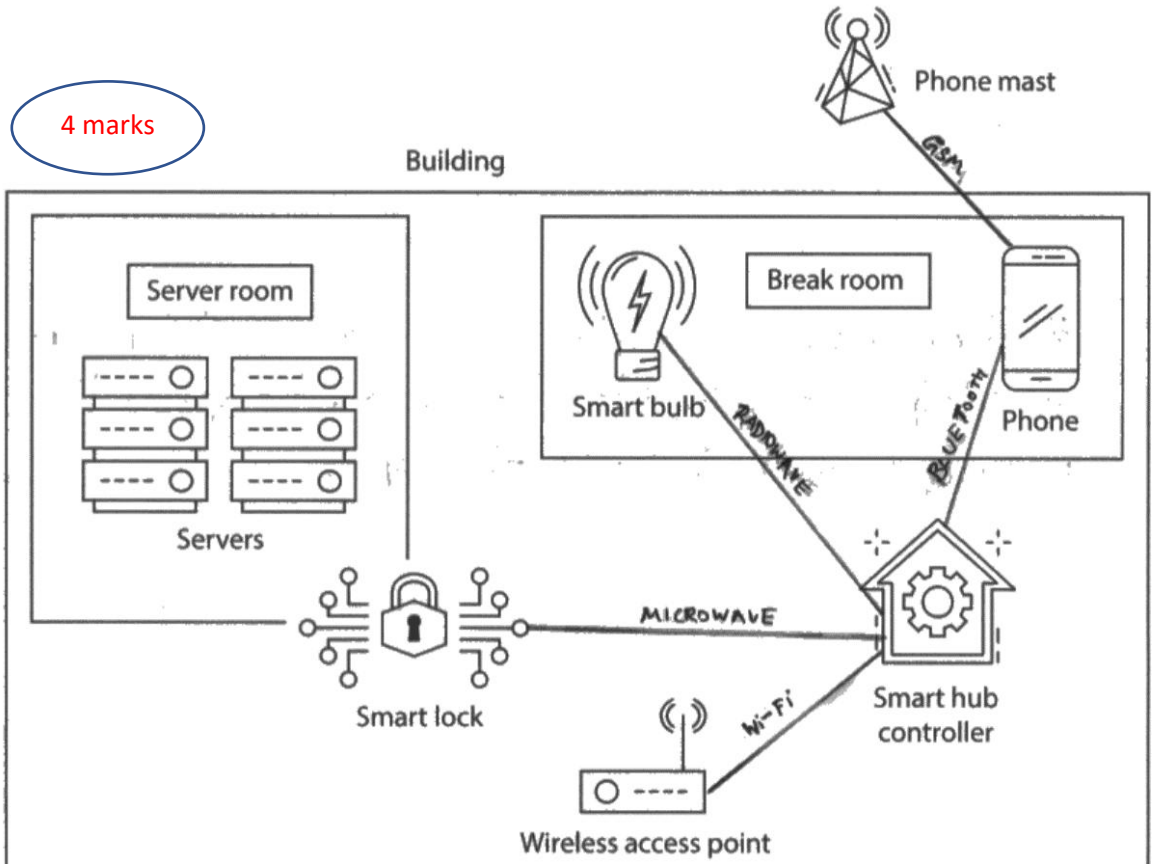
(10)

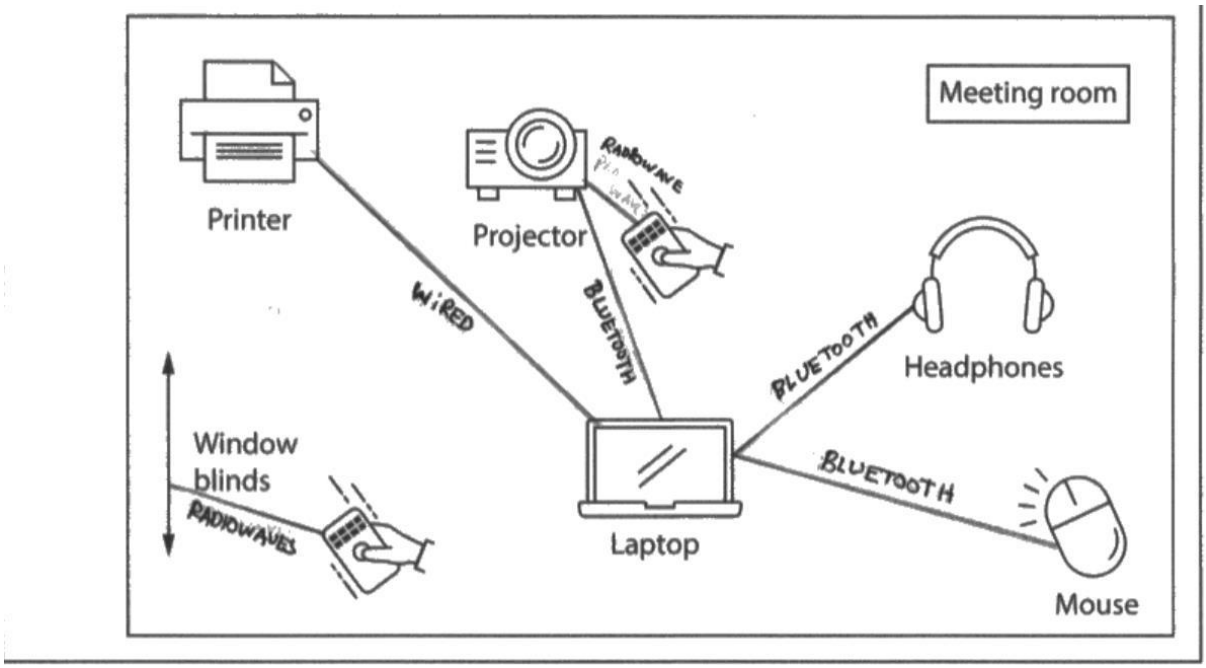
7 marks


Ethernet
Phone mast
Building
Server room
Servers
Break room
Smart bulb
Phone
F. USB-C
Zigbee
Smart lock
Smart hub controller
Wi-Fi
Wireless access point


Meeting room
Printer
Projector
Infrared
WiFi
Ethernet
HDMI
Headphones
Blue tooth
Window blinds
Infrared
Laptop
Blue tooth
Mouse

4 marks


Phone mast
GSM
Building
Server room
Servers
Break room
Smart bulb
Phone
RADIOWAVE
BLUETOOTH
MICROWAVE
Smart lock
Smart hub controller
Wi-Fi
Wireless access point


Meeting room
Printer
Projector
RADIOWAVE
WIRED
BLUETOOTH
Headphones
Window blinds
RADIOWAVES
Laptop
BLUETOOTH
Mouse

Q02d

This question requires a description of the process used to connect a laptop to cloud storage, using a smartphone as a hotspot.

Where responses were not awarded both marks, it was usually because they described the act of storing data in the cloud or characteristics of cloud storage, rather than the process needed to connect the phone and laptop to the cloud storage.

(d) After meeting with a client, an accountant rests in a local park.

She has a smartphone and laptop with her.

She needs to store her meeting notes in the cloud.

The notes are on her laptop.

Describe how she can use her devices to store her meeting notes in the cloud.

2 marks

(2)

She can send the notes to her smartphone via e-mail and when she has her notes on the She can use tethering to make her smartphone a hots pot, the laptop can connect and upload the files onto the cloud, the phone provides an internet connection.

(Total for Question 2 = 16 marks)

(d) After meeting with a client, an accountant rests in a local park.

She has a smartphone and laptop with her.

She needs to store her meeting notes in the cloud.

The notes are on her laptop.

Describe how she can use her devices to store her meeting notes in the cloud.

1 mark

(2)

She can transfer the files from her computer to her phone using bluetooth or a USB-C wire, which are both effective ways to transfer files over short distances.

(d) After meeting with a client, an accountant rests in a local park.

She has a smartphone and laptop with her.

She needs to store her meeting notes in the cloud.

The notes are on her laptop.

Describe how she can use her devices to store her meeting notes in the cloud.

(2)

0 marks

After the meeting with her client she must transfer the notes into a file. After that that may log in to her cloud and upload the ~~a~~ data file ~~s~~ containing her notes. Thus she can now access her notes from anywhere, without the need of her laptop.

(Total for Question 2 = 16 marks)

Q03ai

This question requires interpretation of a given set of database tables.

The composite key was the most frequently missed part of the response. Few responses recognised that three fields were required.

3 Bookstores use networks and software applications.

(a) **Figure 1** shows partial tables from the database belonging to the owner of two bookstores.

tbl_employee

empNum	address	postCode	rate
594998	Next Town	NT12345	12.65
721231	Home City	HC87612	13.82
838485	Next Town	NT12346	12.75

tbl_store

storeNum	address	postCode
73	The Mall	TM34954
45	High Street	HS79150

tbl_shift

store	date	start	end	employee
45	15-03-2023	09:30	15:00	721231
73	19-05-2023	11:00	14:00	594998
73	19-05-2023	18:00	21:00	594998
73	19-05-2023	11:00	19:00	838485

Figure 1

(i) Complete the table to give the field names of the keys described.

(4)

3 marks

Table	Key	Field names
tbl_employee	Primary	empNum
tbl_store	Primary	StoreNum
tbl_shift	Foreign	employee
tbl_shift	Composite	date , employee

(i) Complete the table to give the field names of the keys described.

(4)

2 marks

Table	Key	Field names
tbl_employee	Primary	empNum
tbl_store	Primary	postCode
tbl_shift	Foreign	store
tbl_shift	Composite	store

(i) Complete the table to give the field names of the keys described.

(4)

1 mark

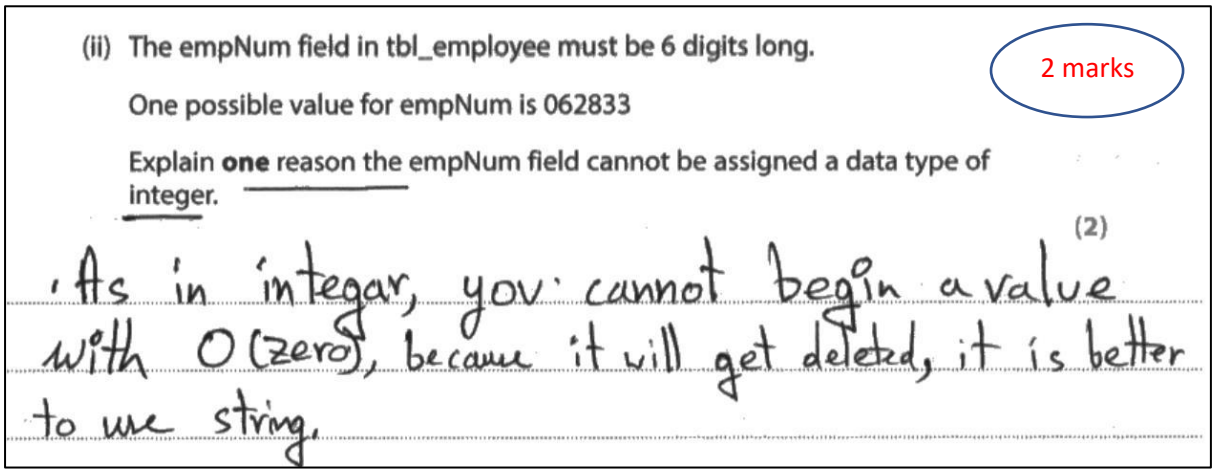
Table	Key	Field names
tbl_employee	Primary	emp Num
tbl_store	Primary	postCode
tbl_shift	Foreign	Start
tbl_shift	Composite	date

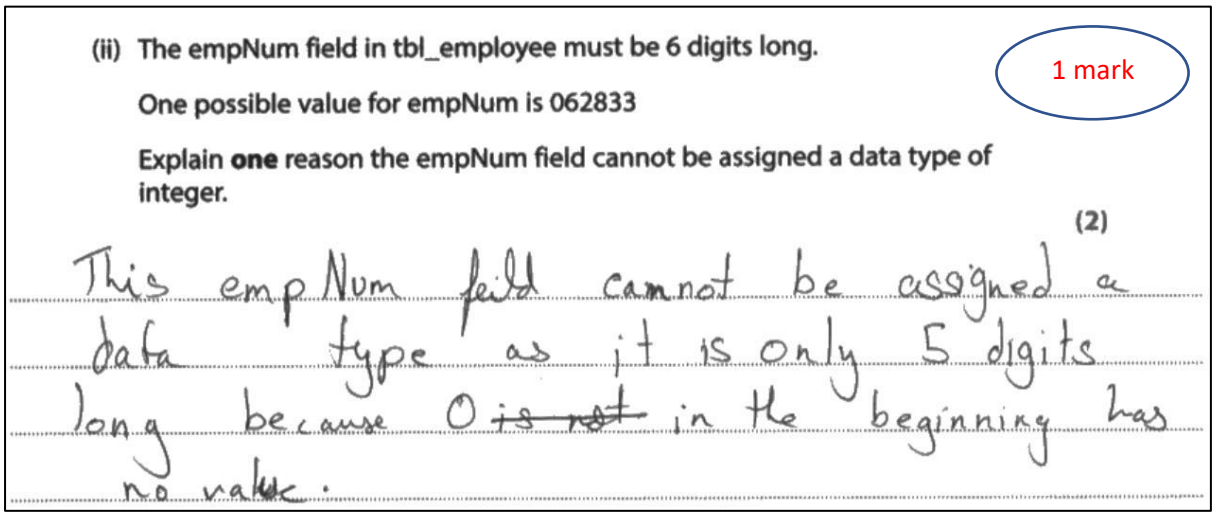
Q03aii

This question asks about the way that numbers and text are stored in a database.

Examiners saw responses stating that the number could not be stored as an integer. That was given in the question, so did not earn a mark.

The response requires a linked explanation of why it cannot be stored as an integer. The expansion could be a suggestion for an alternative data type. Either the reason why or an alternative data type was awarded a single mark.





(ii) The empNum field in tbl_employee must be 6 digits long.

One possible value for empNum is 062833

Explain **one** reason the empNum field cannot be assigned a data type of integer.

(2)

1 mark

the number of specified ~~was~~ digits cannot be done using integer, It can be done by using varchar ( ) . eg: varchar(6) . It is not going to be used for calculations

(ii) The empNum field in tbl_employee must be 6 digits long.

One possible value for empNum is 062833

Explain **one** reason the empNum field cannot be assigned a data type of integer.

(2)

0 marks

Because, the empNum is a primary key and a primary key is a unique identifier and must be 6 digits

Q03bi

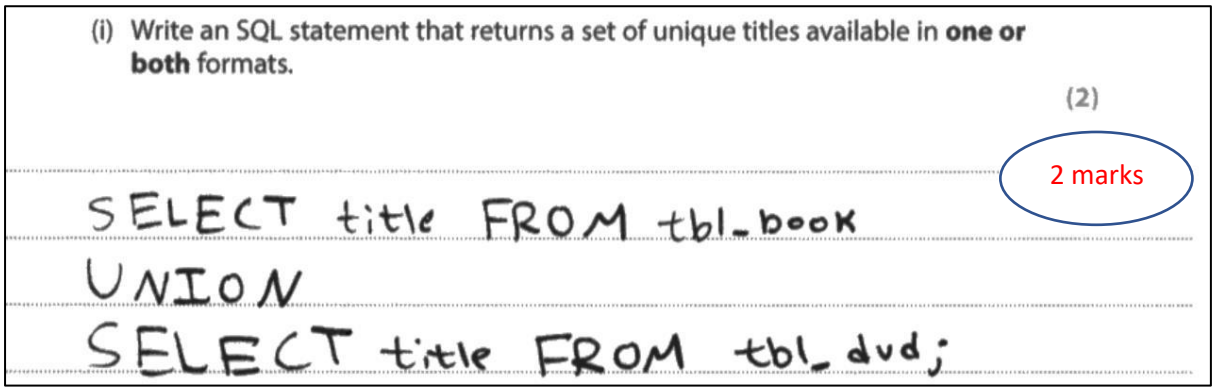
This question requires the construction of an SQL statement. The statement returns the set of unique titles available in one or both tables.

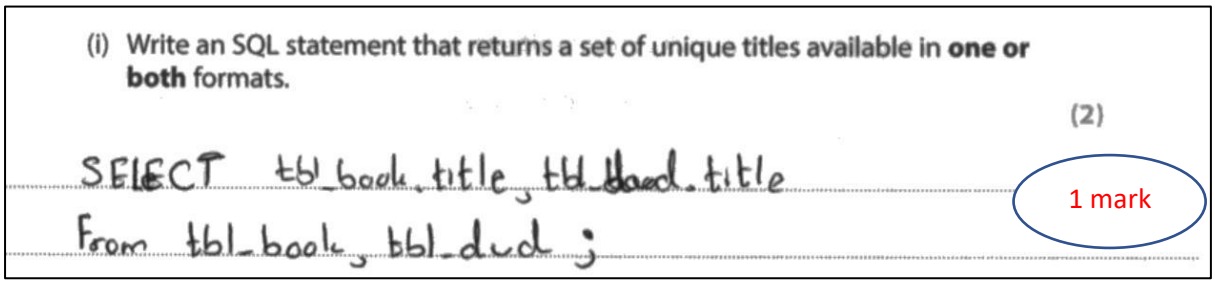
Examiners awarded some responses both marks. Other responses were awarded one mark for an accurate select statement.

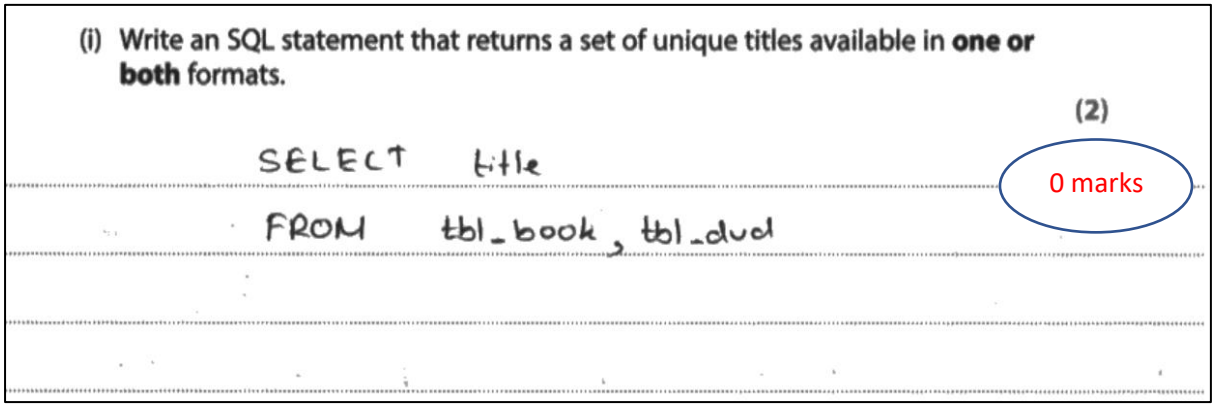
Some responses attempted to find all the items in both tables, including duplicates. Other responses attempted to find only the titles that appeared in both tables, i.e. the intersection.

The most common error in creating the select statement was related to the number and name of the fields and how they worked with the corresponding number and name of the tables. Examiners often saw one field name and two tables.

Using the Boolean operator AND between table names was also seen. Another error involved attempting to use DISTINCT or JOIN.





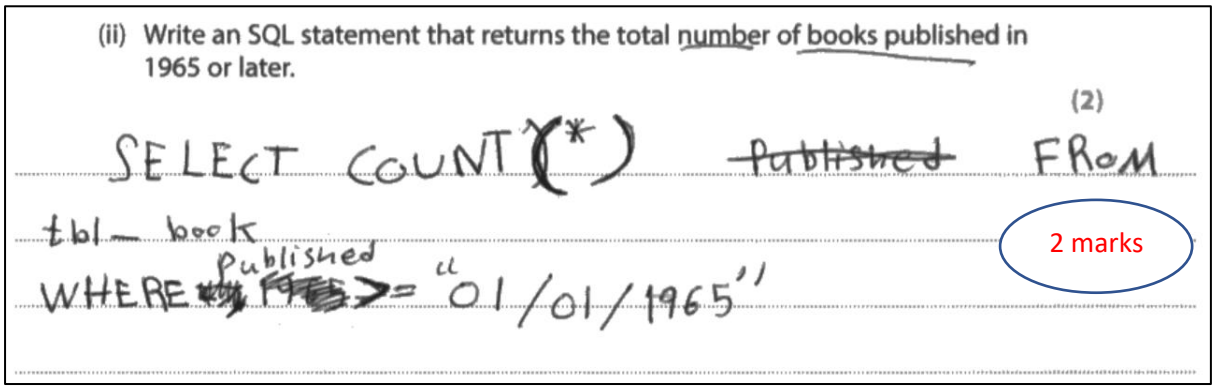


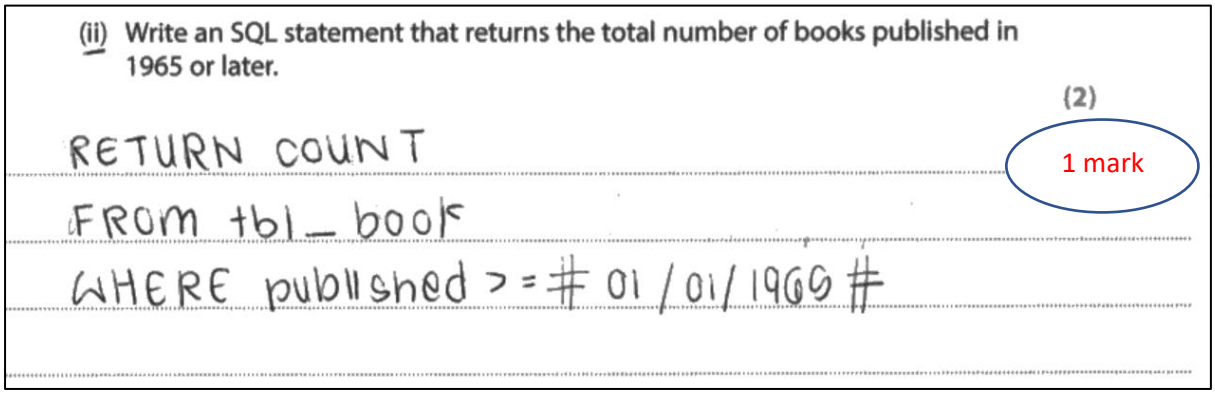
Q03bii

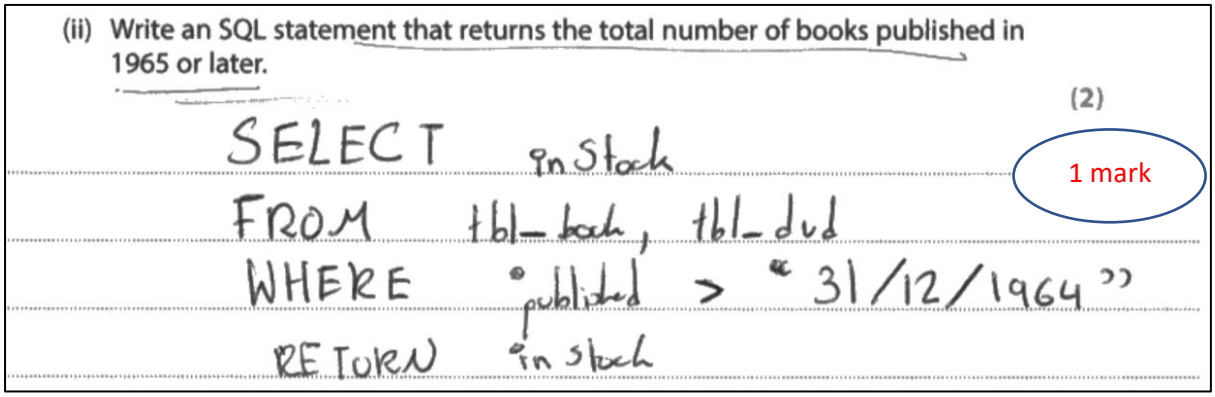
This question also required the construction of an SQL statement. The statement return the number, not the titles of, all books published in 1965 or later.

A number of responses were awarded both marks. Some responses were awarded one mark for an accurate where clause, while others were awarded for a correct select clause.

Responses that used LIKE to pattern match the date were not awarded. Some responses confused field names (no quotation marks) with arguments (quotation marks required).







(ii) Write an SQL statement that returns the total number of books published in 1965 or later.

(2)

FROM tbl_book , tbl_dvd,

Select Published,

Like ~~[illegible]~~ ≥" **/**/1965,

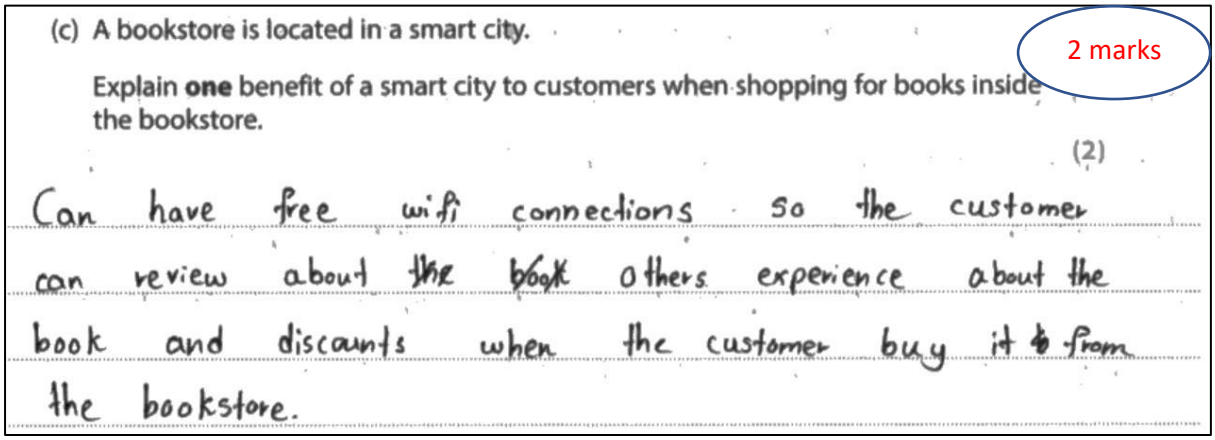
0 marks

Q03c

This question requires an understanding of smart cities.

The mark for what can be done in a smart city was award more frequently than the mark for the ubiquitous Wi-Fi provided in the smart city.

Locating a particular book or finding further information about a physical book were common accurate responses. Electronic payment was a common inaccurate response.



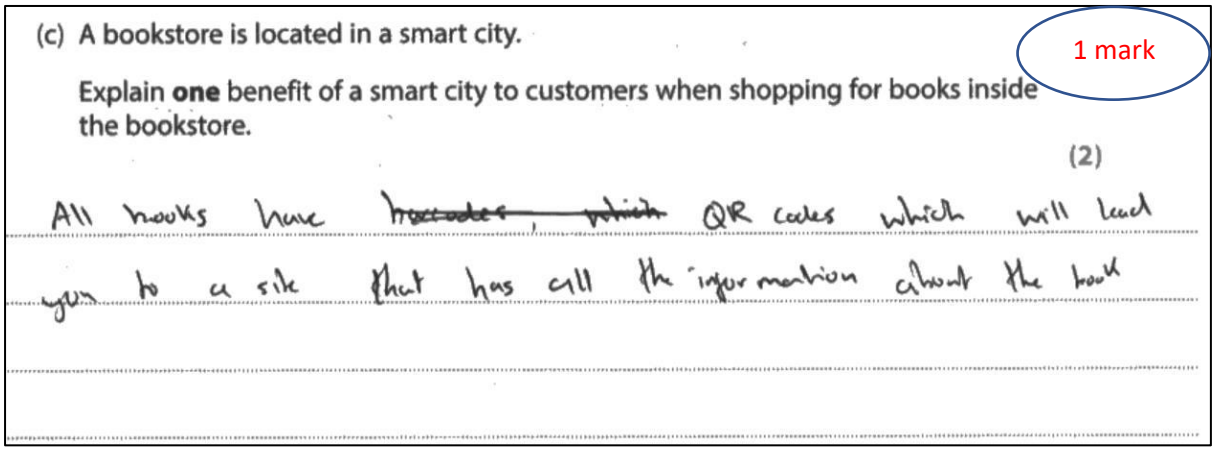
(c) A bookstore is located in a smart city.

Explain **one** benefit of a smart city to customers when shopping for books inside the bookstore.

(2)

2 marks

Can have free wifi connections so the customer can review about the book others experience about the book and discounts when the customer buy it from the bookstore.



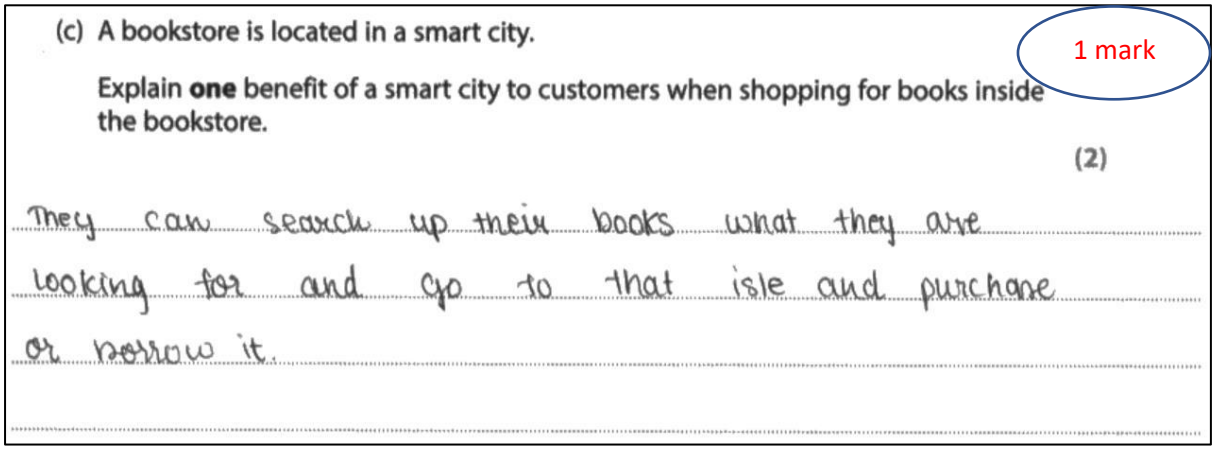
(c) A bookstore is located in a smart city.

Explain **one** benefit of a smart city to customers when shopping for books inside the bookstore.

(2)

1 mark

All books have ~~barcodes, which~~ QR codes which will lead you to a site that has all the information about the book



(c) A bookstore is located in a smart city.

Explain **one** benefit of a smart city to customers when shopping for books inside the bookstore.

(2)

1 mark

They can search up their books what they are looking for and go to that isle and purchase or borrow it.

(c) A bookstore is located in a smart city.

Explain **one** benefit of a smart city to customers when shopping for books inside the bookstore.

(2)

0 marks

They can pay for books with their smartphones using NFC

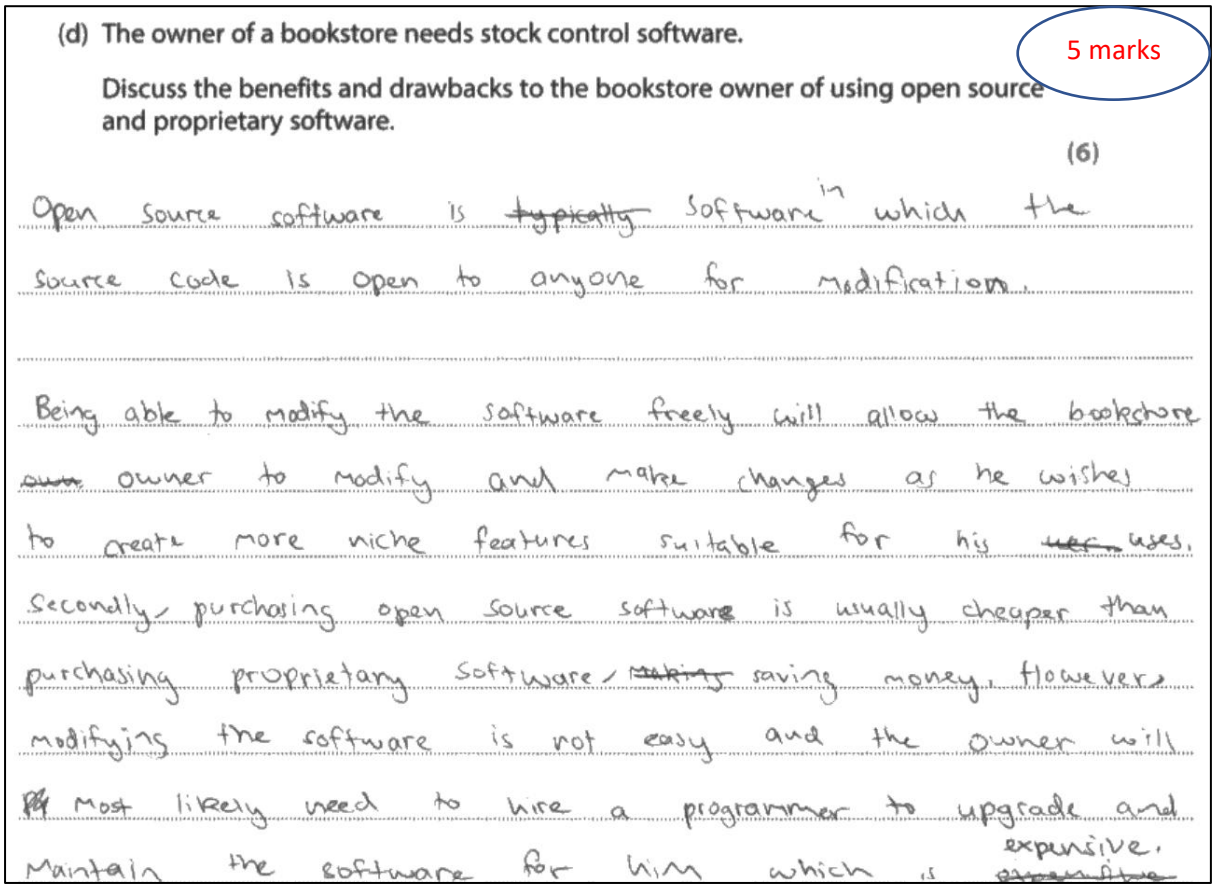
Q03d

Examiners awarded a range of marks for this essay questions. Marks were awarded in all three levels-based mark scheme bands.

The question asks for a discussion of the benefits and drawbacks of open source and proprietary software. Responses do not need to compare or contrast the two types of software. A balanced discussion should include the benefits and/or drawbacks of using open source software and the benefits and/or drawbacks of using proprietary software. For some scenarios, always finding an opposite drawback for a benefit leads to vague or inaccurate information being included.

Responses commonly indicated that open source software has many bugs, security issues, and fewer capabilities, whereas proprietary software is bug and security issue free and has more capabilities.

The difference between the two is about licensing, not about the product. Indeed, much of the software we use every day is based on open-source software. The Linux operating system is open source. Python is an open source programming language. Industry has moved on and now open-source software is contributed to and maintained by recognisable giants of the IT industry.



(d) The owner of a bookstore needs stock control software.

5 marks

Discuss the benefits and drawbacks to the bookstore owner of using open source and proprietary software.

(6)

Open source software is ~~typically~~ software in which the source code is open to anyone for modification.

Being able to modify the software freely will allow the bookstore ~~owner~~ owner to modify and make changes as he wishes to create more niche features suitable for his ~~use~~ uses. Secondly, purchasing open source software is usually cheaper than purchasing proprietary software / ~~making~~ saving money. However, modifying the software is not easy and the owner will most likely need to hire a programmer to upgrade and maintain the software for him which is ~~very~~ expensive.

Proprietary software is software that only the developers can modify and change the source-code of.

Proprietary software has a whole team of people behind it, meaning if the bookstore owner encounters a problem, he can contact the support team. Secondly, proprietary software receives constant small patches to fix bugs or add more features to improve productivity. Despite all that, proprietary ~~software~~ ware is usually far more costly than open-source software and may not have the desired features. (rest written on page 15)

(d) The owner of a bookstore needs stock control software. 3 marks

Discuss the benefits and drawbacks to the bookstore owner of using open source and proprietary software.

(6)

There are various benefits of open source software. To start with, Open source software is most often free of charge and therefore is much more cost ~~effice~~ effective. Furthermore, the bookstore will be able to modify and use open source software without any problems. However, Most often, open source softwares offer only a limited set of capabilities to the user. The use of proprietary software also has

It's own benefits and drawbacks. Firstly these softwares offer much more capabilities to the user as ~~mostly~~ they are bought by users for ~~an~~ money. However, this can also be seen as a drawback as, paying to use these softwares, increase the cost for the business. Nevertheless, Modifyi -ng these softwares might result in copyrig -ht issue as they are considered as property of it's creator, who is allowed to determine what happens with the software. To end with, using open source software is recommended as it is cheaper.

Q04a

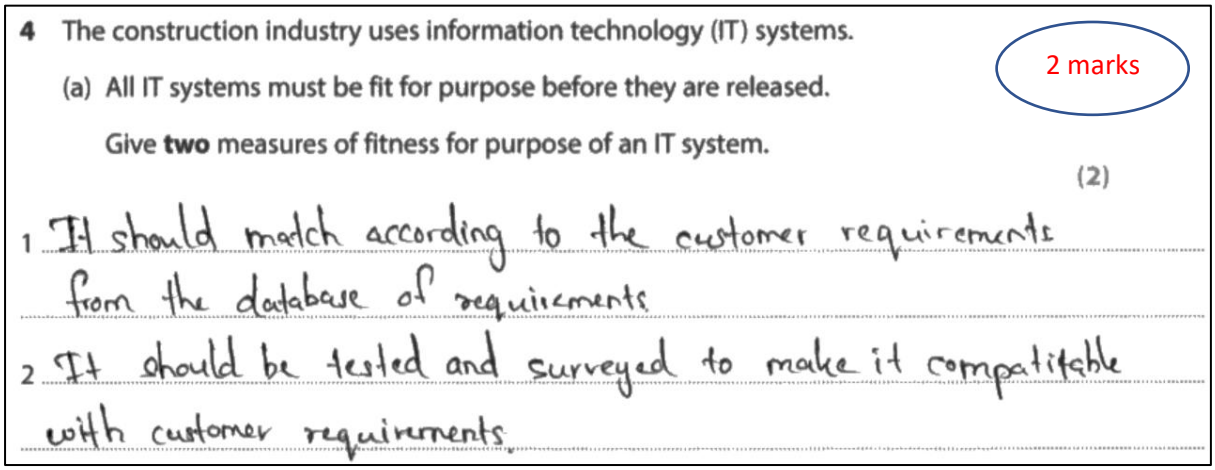
This question requires identification of ways used to determine if an IT system is fit for purpose.

Some responses were not clear in explaining that the criteria for judging fitness for purpose must be set out before undertaking a project, rather than something that just happens at the end of development.

Responses indicating requirements and testing were awarded.

Other responses indicated a range of measures, including:

- Speed of the system
- Resilience to cyber attack
- Absence of bugs
- Absence of viruses or other malware.



4 The construction industry uses information technology (IT) systems.

(a) All IT systems must be fit for purpose before they are released.

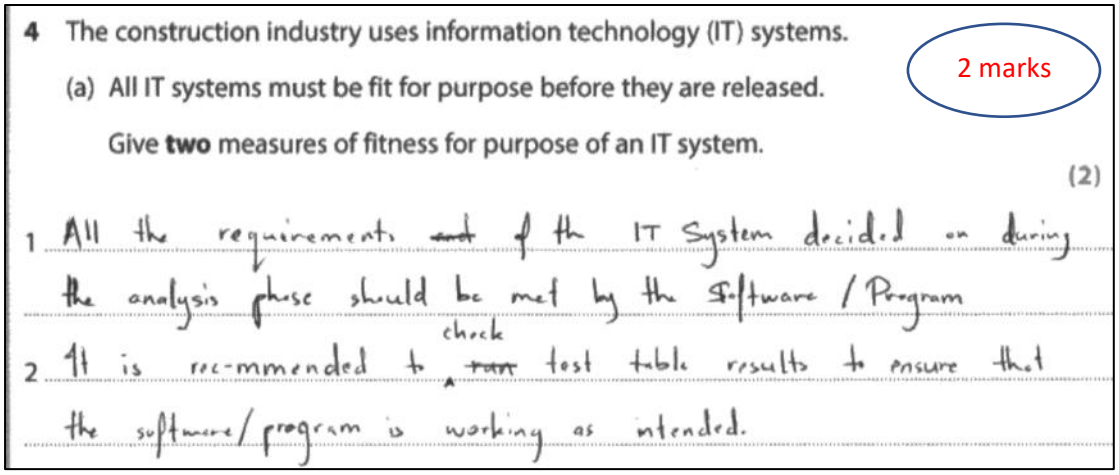
Give **two** measures of fitness for purpose of an IT system.

2 marks

(2)

1 It should match according to the customer requirements from the database of requirements

2 It should be tested and surveyed to make it compatitable with customer requirements



4 The construction industry uses information technology (IT) systems.

(a) All IT systems must be fit for purpose before they are released.

Give **two** measures of fitness for purpose of an IT system.

2 marks

(2)

1 All the requirements ~~and~~ of the IT System decided on during the analysis phase should be met by the Software / Program

2 It is recommended to check ~~run~~ test table results to ensure that the software / program is working as intended.

4 The construction industry uses information technology (IT) systems.

1 mark

(a) All IT systems must be fit for purpose before they are released.

Give **two** measures of fitness for purpose of an IT system.

(2)

1 The created product matches the requirements stated at the analysis stage

2 ~~If the~~ Checking if the product works as intended without issues

4 The construction industry uses information technology (IT) systems.

0 marks

(a) All IT systems must be fit for purpose before they are released.

Give **two** measures of fitness for purpose of an IT system.

(2)

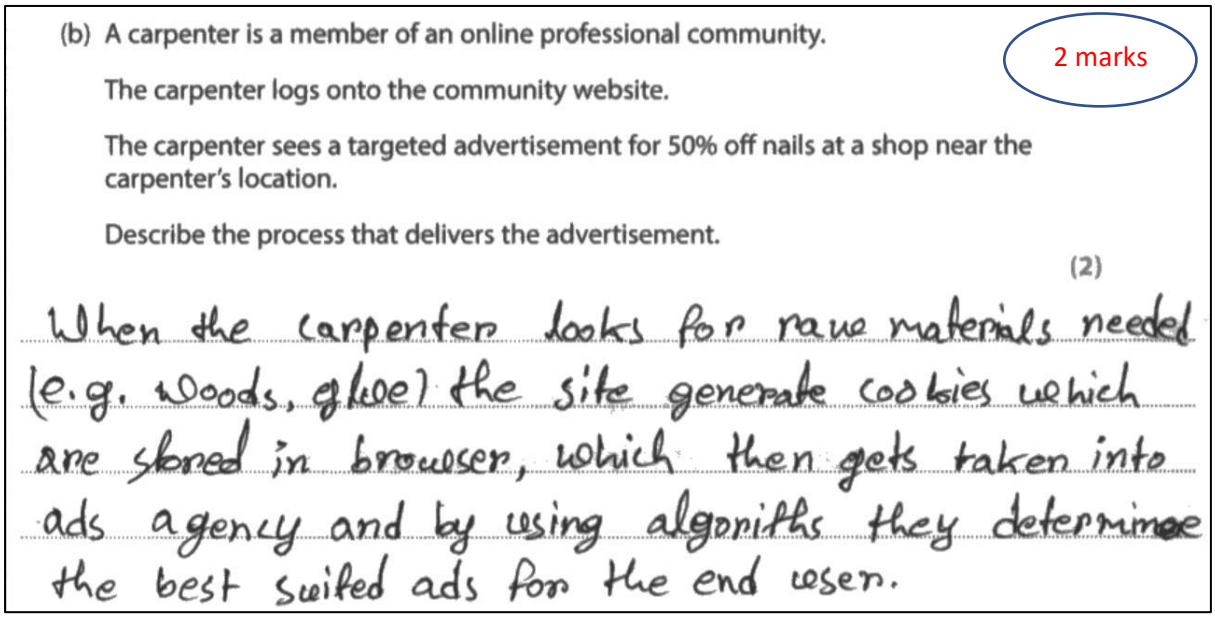
1 Are the customers satisfied with this system and are the current bugs handeled.

2 Is the system easy to navigate and are the employees comfortable with it.

Q04b

The question requires a description of the process of delivering targeted advertising.

Cookies was the most frequently awarded mark. Some responses demonstrated confusion between who paid (the advertiser) and who received payment (the website).



(b) A carpenter is a member of an online professional community.

The carpenter logs onto the community website.

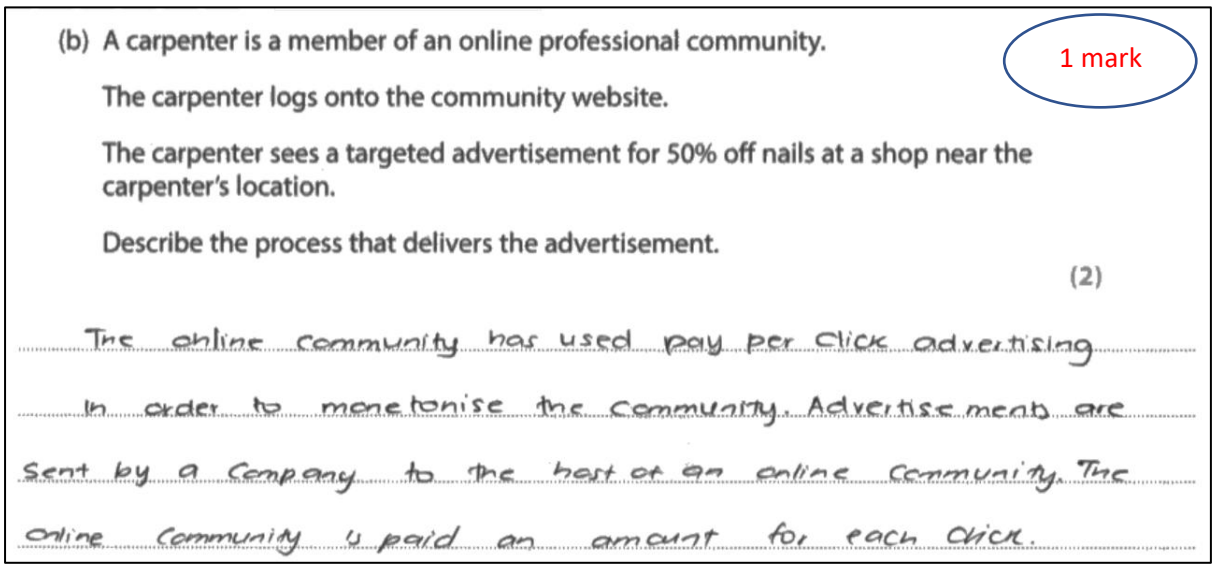
The carpenter sees a targeted advertisement for 50% off nails at a shop near the carpenter's location.

Describe the process that delivers the advertisement.

(2)

2 marks

When the carpenter looks for raw materials needed (e.g. woods, glue) the site generate cookies which are stored in browser, which then gets taken into ads agency and by using algorithms they determine the best suited ads for the end user.



(b) A carpenter is a member of an online professional community.

The carpenter logs onto the community website.

The carpenter sees a targeted advertisement for 50% off nails at a shop near the carpenter's location.

Describe the process that delivers the advertisement.

(2)

1 mark

The online community has used pay per click advertising in order to monetonise the community. Advertisements are sent by a company to the host of an online community. The online community is paid an amount for each click.

(b) A carpenter is a member of an online professional community.

0 marks

The carpenter logs onto the community website.

The carpenter sees a targeted advertisement for 50% off nails at a shop near the carpenter's location.

Describe the process that delivers the advertisement.

(2)

When the advertisement is launched it will identify any suitable people in the ~~vicinity~~ area and it will direct the advertisement towards them.

Q04c

This question required knowledge and understanding of pay-per-click advertising.

Many responses received both marks for identifying who made a payment to whom when the ad symbol was clicked.

Responses that used the term pay-per-click accurately were awarded one of the marks.

A confusion with rank ordering of search results was the most common incorrect response. The question already indicates that the search results are ordered by popularity.

(c) A plumber uses a search engine to find a local firm renting small diggers.

The search results are ordered.

The top search results are shown in **Figure 3**.

Tool Place Hire – Same Day Collection Ad

Operating for over 40 years. Branches across the north east.
Check out our website.

Top Brands at Hyre Tools – Click & Collect Ad

We offer more than tools. See our top brand offers.
Paint now 15% off.

Figure 3

Explain **one** way this form of monetisation works.

2 marks

Pay - Per- Click Advertising. Each time a user clicks the ~~adct~~ ad ~~adct~~ the owner of the website will receive a fee from the advertisor. (owner of the ad)

Explain **one** way this form of monetisation works.

1 mark

As the ads are placed at the top of the search results, it will more likely be chosen. When a user clicks on the ad, they may purchase a product from that company.

Explain **one** way this form of monetisation works.

0 marks

The above mentioned monetisation works, when an advertisment is boosted. One can pay an amount for such as 'google Ads' an then post their advertisment then it will appear as a top result in the top of the page giving priority to that certain webpage or advertisment.

Q04d

This question required drawing a flowchart to describe the process that takes place when a user submits a form on a web page.

Examiners awarded the full range of marks for this question. The least frequently awarded mark was bullet 4, with no indication of how the email was checked for previous registration.

(d) An e-commerce company rents equipment to the construction trade via its website.

A customer must register before renting equipment.

Figure 4 shows the registration page.

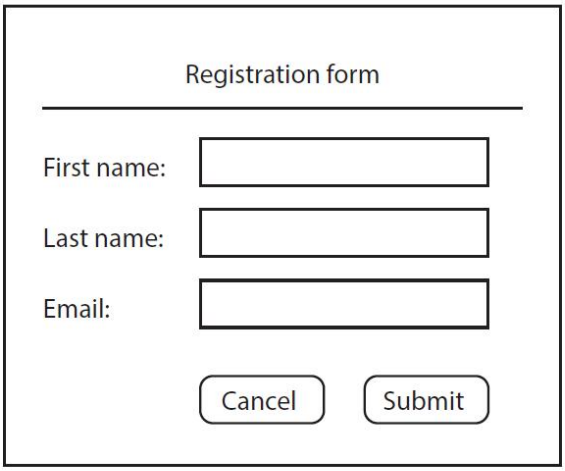


Figure 4

A blank registration form is displayed.

The customer completes the form by adding first name, last name and email address.

Pressing the cancel button ends the registration process and closes the form.

Pressing the submit button submits the form for validation and processing.

If there is an error on the form:

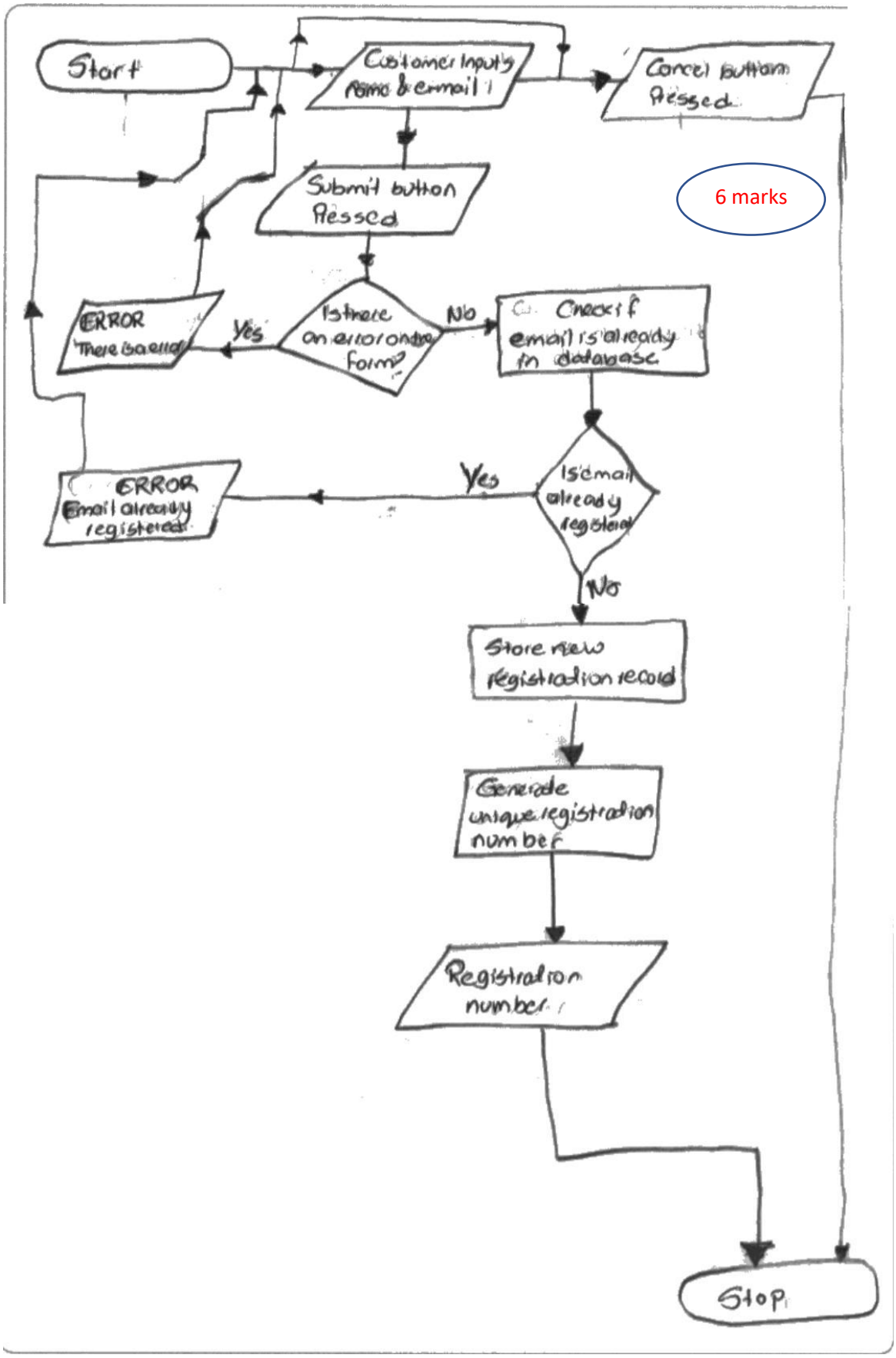
- an error message is shown
- the customer can try again.

If the email address is already registered:

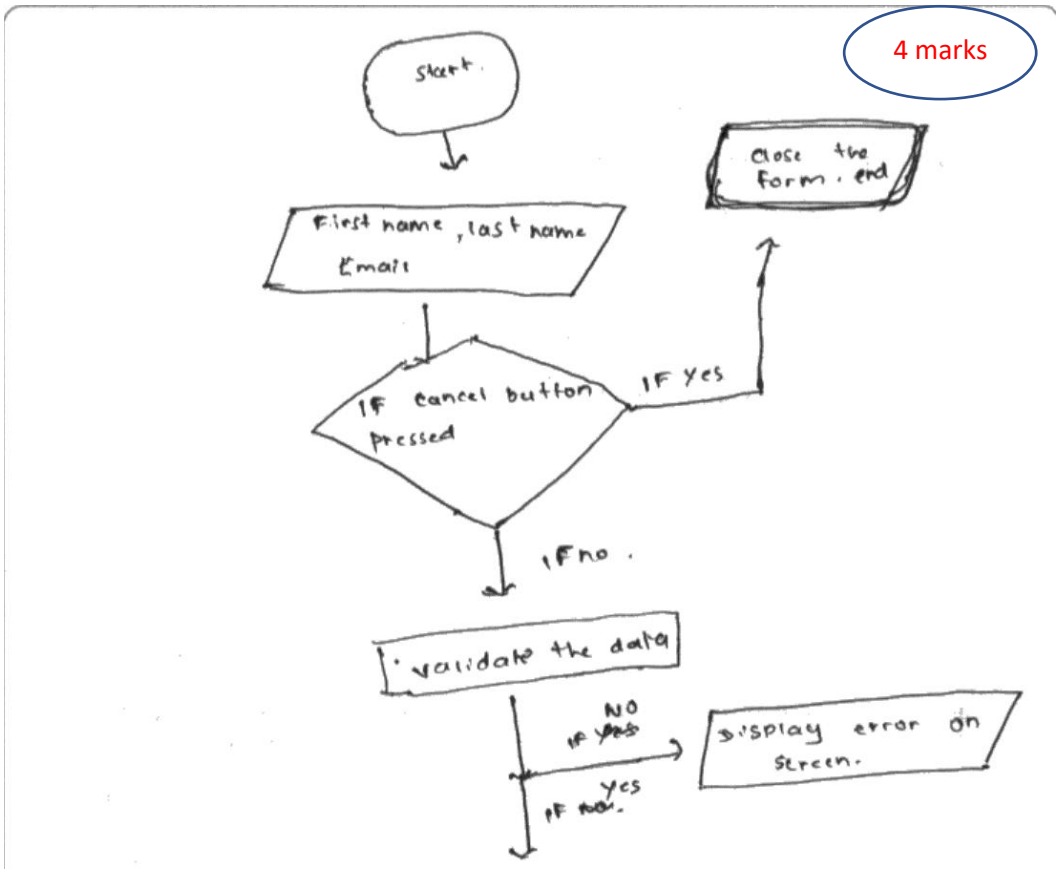
- an error message is shown
- the email address is not accepted and the customer can try again.

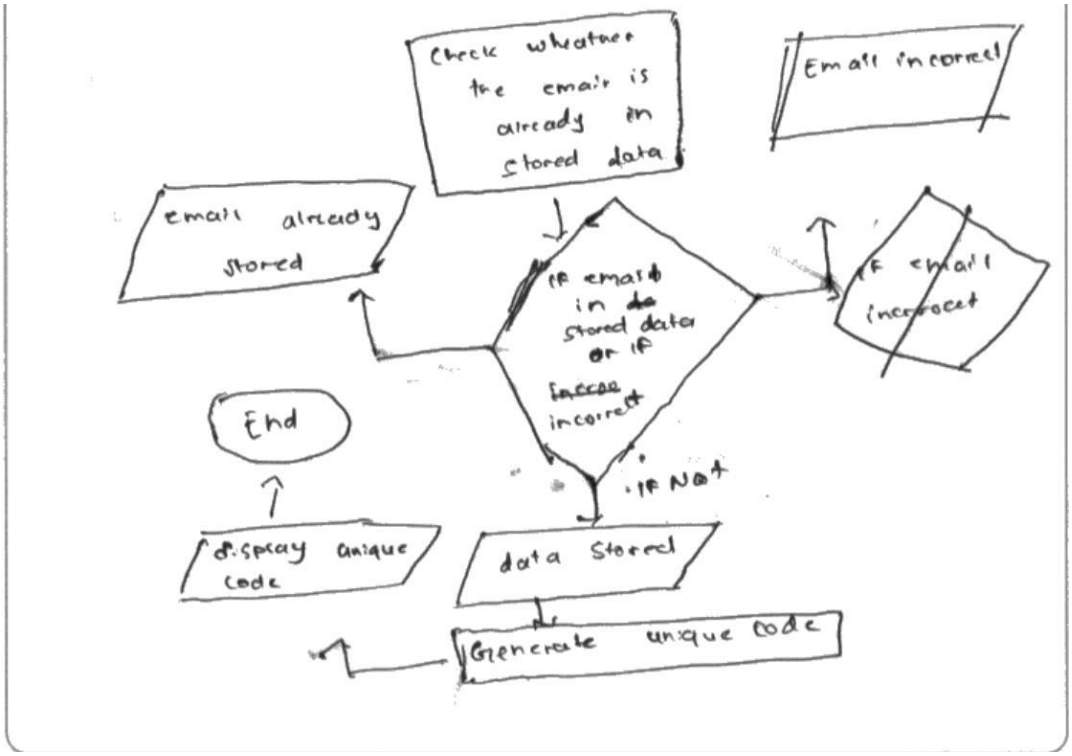
If there is not an error on the form:

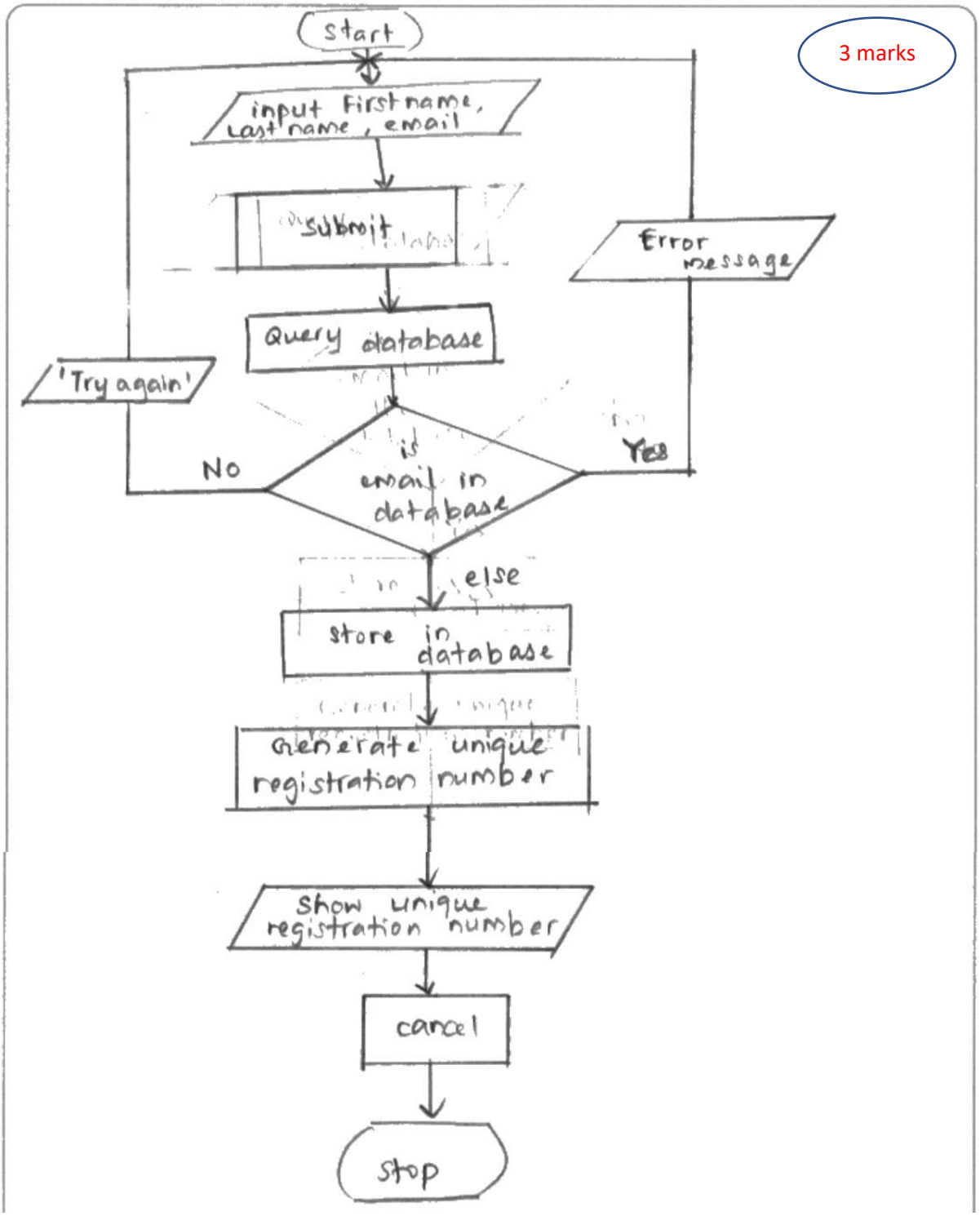
- a new registration record is stored on the company database
- a unique registration number is generated for the new customer
- the customer is shown the unique registration number.


Start
Customer inputs name & email
Cancel button Pressed
Submit button Pressed
6 marks
ERROR
Yes
Is there an error on the form?
No
Check if email is already in database
ERROR
Email already registered
Yes
Is email already registered
No
Store new registration record
Generate unique registration number
Registration number
Stop

4 marks


Start
First name, last name
Email
IF cancel button pressed
IF yes
close the form. end
IF no.
validate the data
NO
display error on screen.
yes


Check whether the email is already in stored data
Email incorrect
email already stored
IF email in stored data or IF incorrect
IF email incorrect
End
IF Not
display unique code
data Stored
Generate unique code

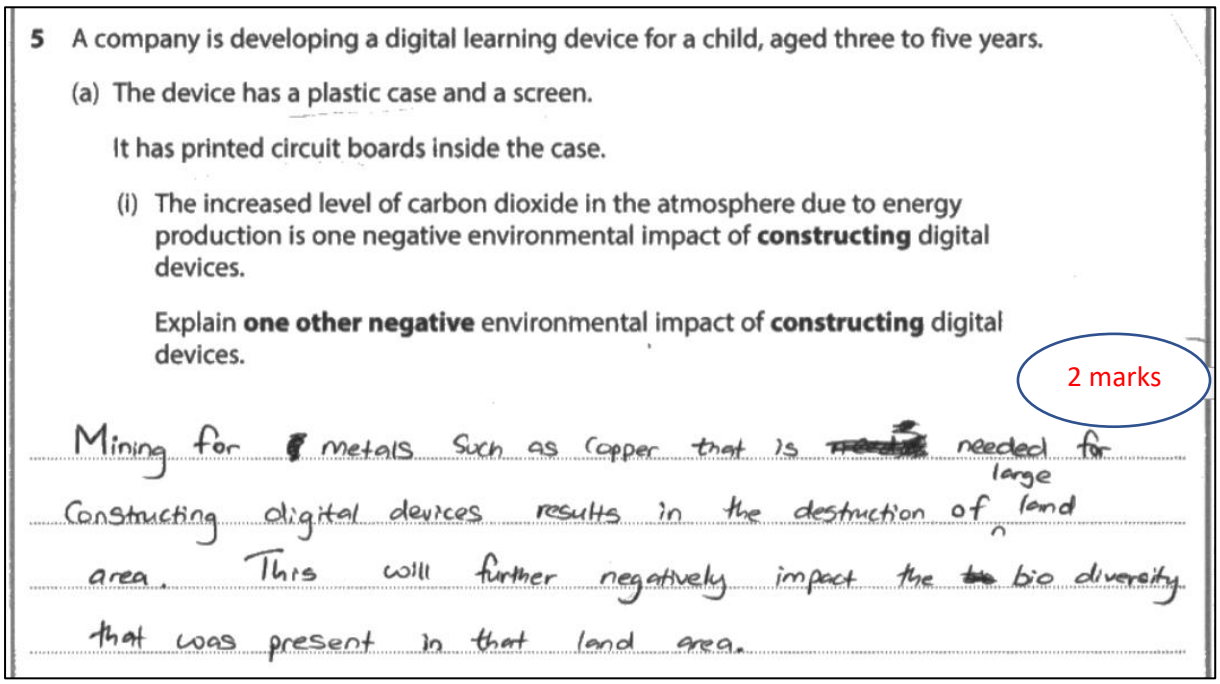

Start
input First name, Last name, email
submit
Error message
Query database
'Try again'
No
is email in database
Yes
else
store in database
generate unique registration number
show unique registration number
cancel
stop

3 marks

Q05ai

This is the first of two environmental questions. In some cases, the response did not match the question being asked, with disposal being addressed in the response to this question about construction.

Responses to a two-mark explain must be linked, e.g. a statement, followed by an expansion or justification. Where responses gave two statements, they could only be awarded one mark.



5 A company is developing a digital learning device for a child, aged three to five years.

(a) The device has a plastic case and a screen.

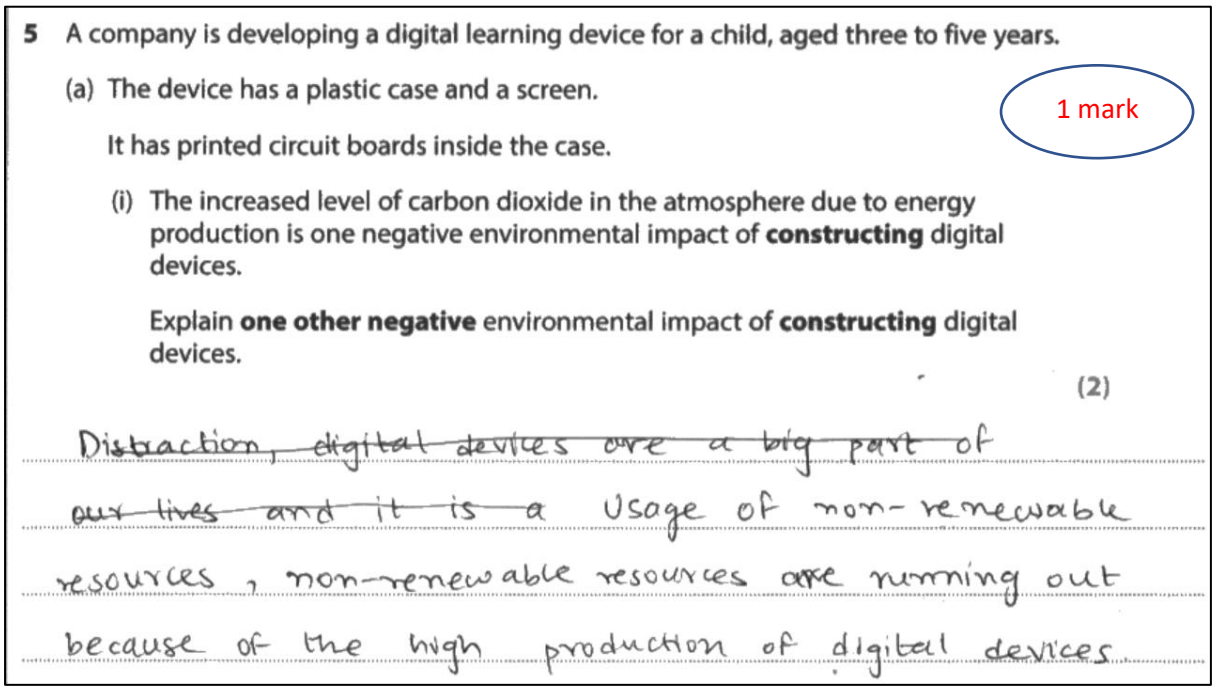
It has printed circuit boards inside the case.

(i) The increased level of carbon dioxide in the atmosphere due to energy production is one negative environmental impact of **constructing** digital devices.

Explain **one other negative** environmental impact of **constructing** digital devices.

2 marks

Mining for metals such as copper that is needed for large Constructing digital devices results in the destruction of land area. This will further negatively impact the bio diversity that was present in that land area.



5 A company is developing a digital learning device for a child, aged three to five years.

(a) The device has a plastic case and a screen.

1 mark

It has printed circuit boards inside the case.

(i) The increased level of carbon dioxide in the atmosphere due to energy production is one negative environmental impact of **constructing** digital devices.

Explain **one other negative** environmental impact of **constructing** digital devices.

(2)

Distraction, digital devices are a big part of our lives and it is a usage of non-renewable resources, non-renewable resources are running out because of the high production of digital devices.

5 A company is developing a digital learning device for a child, aged three to five years.

(a) The device has a plastic case and a screen.

It has printed circuit boards inside the case.

0 marks

(i) The increased level of carbon dioxide in the atmosphere due to energy production is one negative environmental impact of **constructing** digital devices.

Explain **one other negative** environmental impact of **constructing** digital devices.

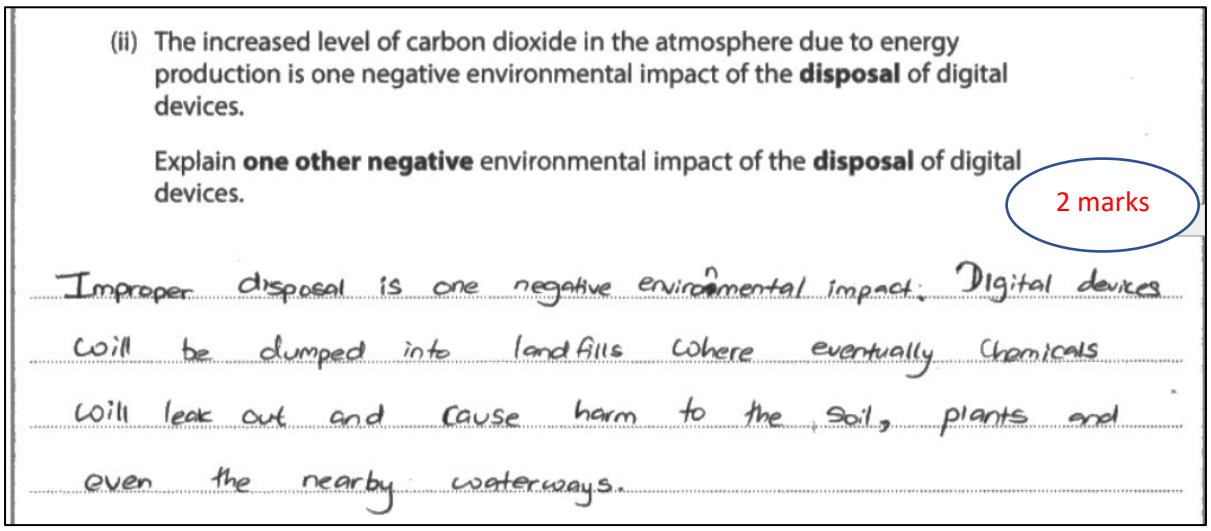
(2)

A lot of resources are required for building digital devices and it may have a negative environmental impact.

Q05aii

This is the second of two environmental questions. In some cases, the response did not match the question being asked, with construction being addressed in the response to this question about disposal.

Responses to a two-mark explain must be linked, e.g. a statement, followed by an expansion or justification. Where responses gave two statements, they could only be awarded one mark.

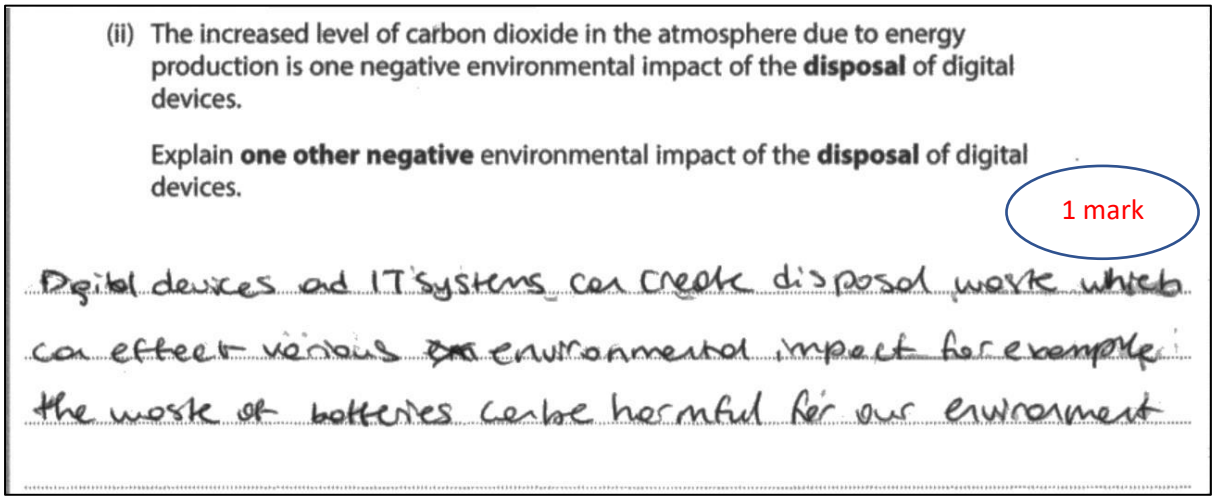


(ii) The increased level of carbon dioxide in the atmosphere due to energy production is one negative environmental impact of the **disposal** of digital devices.

Explain **one other negative** environmental impact of the **disposal** of digital devices.

2 marks

Improper disposal is one negative environmental impact. Digital devices will be dumped into landfills where eventually chemicals will leak out and cause harm to the soil, plants and even the nearby waterways.

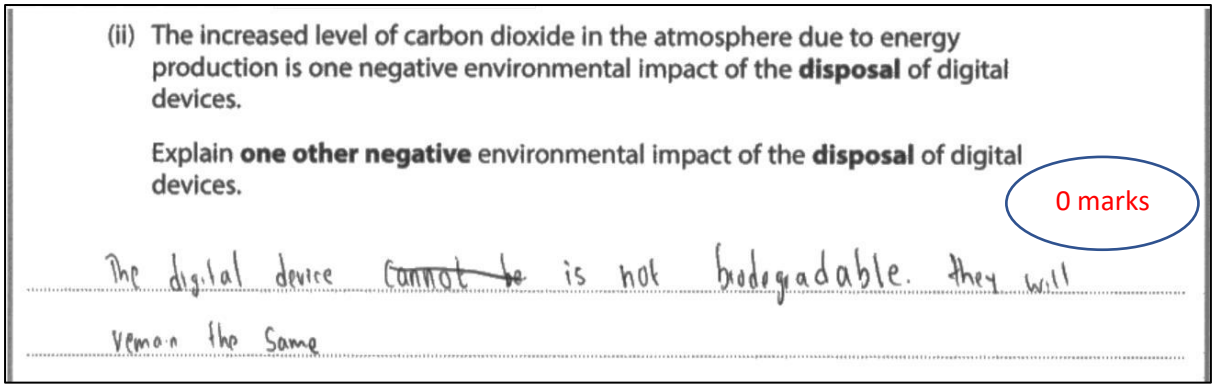


(ii) The increased level of carbon dioxide in the atmosphere due to energy production is one negative environmental impact of the **disposal** of digital devices.

Explain **one other negative** environmental impact of the **disposal** of digital devices.

1 mark

Digital devices and IT systems can create disposal waste which can effect various ~~on~~ environmental impact for example the waste of batteries can be harmful for our environment



(ii) The increased level of carbon dioxide in the atmosphere due to energy production is one negative environmental impact of the **disposal** of digital devices.

Explain **one other negative** environmental impact of the **disposal** of digital devices.

0 marks

The digital device ~~cannot be~~ is not biodegradable. they will remain the same

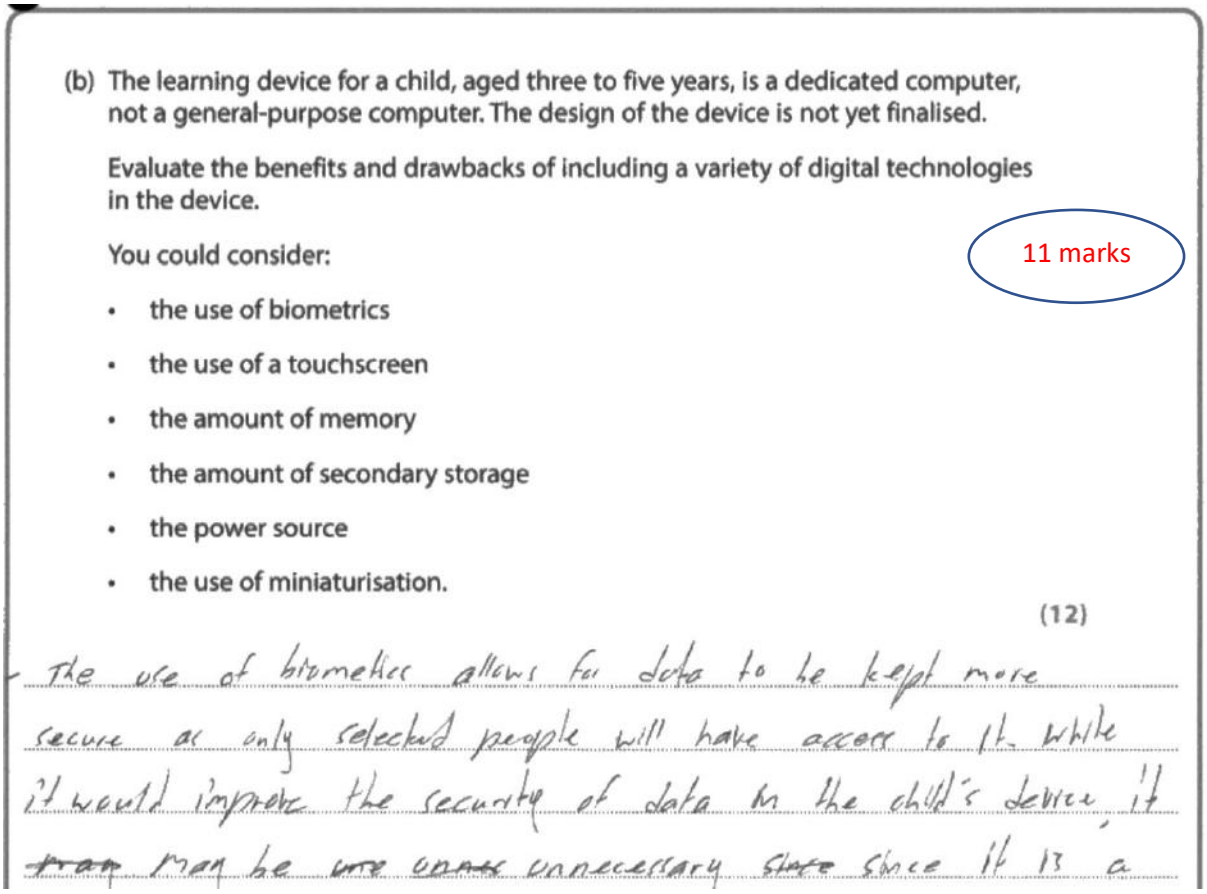
Q05b

The long essay question asks for an evaluation a range of technologies used in a child's learning device.

A range of marks was awarded for this essay question. Marks were awarded in all three levels-based mark scheme bands.

The best responses were in the context of the child's learning device and considered benefits and drawbacks of several technologies.

While it is a good idea to use the bullets to guide writing the essay response, it is not necessary to address every bullet with a benefit and a drawback. In some scenarios, there may be a very clear benefit and no clear drawback, or vice versa. Trying to find one can lead to inclusion of vague or inaccurate information.



(b) The learning device for a child, aged three to five years, is a dedicated computer, not a general-purpose computer. The design of the device is not yet finalised.

Evaluate the benefits and drawbacks of including a variety of digital technologies in the device.

You could consider:

11 marks

- the use of biometrics
- the use of a touchscreen
- the amount of memory
- the amount of secondary storage
- the power source
- the use of miniaturisation.

(12)

The use of biometrics allows for data to be kept more secure as only selected people will have access to it. While it would improve the security of data in the child's device, it may be unnecessary since it is a

computer dedicated to learning and is targetted for children of age 3-5, they may not require any form of data protection security. Additionally since it is a dedicated computer and not a general purpose computer, parents will not have the worry of children misusing the device and will not have the need to use their biometrics on the device to limit the usage of it.

- Touchscreens may be a useful addition for the learning device as it can provide more functionality than old fashioned buttons, children for example could answer multiple choice questions with ease in comparison to if the device had to have different tailored buttons for features of the device. Moreover it is more of the times to use touchscreens and children may feel valued which can help increase their self esteem as they are using a device similar to their parents (smartphones).
- considering it is a dedicated device and isn't for general purpose, The learning computer may not require a large amount of memory; a maximum of 4GB may be optimal as it is more than enough to run individual programs at individual times.
- The learning device could store educational videos which can be helpful to children that are more visual learners, and the device will need storage to store system files and other educational applications. This may require an ambiguous amount of secondary storage but 16GB to 32GB of secondary storage may be ideal.

The learning device could have a ~~be~~ rechargeable battery which improves its functionality; children do not have to be in the ~~same~~ same place when using the devices.
The use of miniaturisation may be useful as children of the ages ~~of~~ 3-5 have physically smaller hands and therefore the device could be ~~made~~ made to a smaller tailored size.
Overall the use of modern digital technologies can be beneficial as additions to ~~the~~ the learning device but ~~must~~ with considerations of usage, ~~and~~ and requirement in mind.

(b) The learning device for a child, aged three to five years, is a dedicated computer, not a general-purpose computer. The design of the device is not yet finalised.

Evaluate the benefits and drawbacks of including a variety of digital technologies in the device.

You could consider:

- the use of biometrics
- the use of a touchscreen
- the amount of memory
- the amount of secondary storage
- the power source
- the use of miniaturisation.

5 marks

(12)

The use of biometrics in the device may be important for parental controls, so that they can be the only person to lock or unlock the device for their kids in order to limit screen time.

~~Text~~ They can be expensive to add as a scanner would need to installed onto the computer hardware. Various other digital technologies can be included, for example the use of touchscreen. This can help to make the device more interactive and accessible to various types of kids or kids who are unaware of how to use a computer device. ~~Memory should be~~ However touch screens are also expensive and can often be unresponsive causing lags to occur. The computer should have an adequate amount of memory, which should be enough to store the child's learning programs. There should be enough RAM to run the programs and enough ROM to store files. However adding extra memory would also lead to additional costs. The amount of secondary storage can vary according to the needs of the kids. There ~~there~~ should be ~~external~~ SSD slots for expansion of storage if required, this would be very costly as it would require to modify the architecture of the computer. The device must be small and portable for small kids. However portability could result in decreased efficiency of the computer's performance.

~~because~~ It should have ~~built in~~ ~~an~~ battery which can be charged, with additional portability, however ~~itsm~~ using ~~power sources which only~~ batteries which only ~~power~~ give power to a device until it is plugged in would reduce the ~~effeciency of the computer~~ portability of the computer which would cause difficulties for the kid. ~~Additional features such as~~ The device must have proper connectivity for functioning.

(Total for Question 5 = 16 marks)

Summary

- Use subject-specific terminology and notation accurately in all responses
- Read the question carefully to pick out what needs to be added to diagrams
- Provide a statement and a linked expansion for two-mark explain and describe questions
- Ensure your response is phrased in the context of the question, if there is one
- Use the bullets provided in the large discussion question to structure your response