



January 2018

**Level 3 National in
Information Technology**

**Unit 1: Information Technology
Systems (31760H)**

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A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade, Distinction, Merit, Pass and Near Pass.

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When we set grade boundaries, we look at the performance of every learner who took the external assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark should be for a particular grade.

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Unit 1: Information Technology Systems 31760H

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	10	21	32	43

Introduction

This was the second series of the new specification for Information Technology, and as such, the second time that assessment has been via an externally set examination rather than via centre based internal assessment.

The question paper followed the same format as the June 2017 paper and the sample assessment materials published on the Pearson website. Four scenarios were used for assessment; each scenario broken down into a number of questions which assessed a range of specification topics. Candidates were expected to demonstrate knowledge and understanding of the specification topics and apply this knowledge to the given scenarios.

The intention is to offer as broad a coverage as possible for all areas of the unit content. Questions have varying weightings attached to them, with 3 to 6 marks for the lower demand questions and 6 to 12 marks for questions where an extended response was required, such as discussion, analysis or evaluation.

Extended response questions were marked using a 'levels based' approach to assessment. The overall quality of the response was considered rather than the specific number of points gained. There was also a focus on the use of suitable technical and vocational language and terminology within each response. Following the difficulties some candidates had with extended response questions in June 2017 the number of this type of question was reduced from nine to five.

There was one diagram question on the paper and this was also marked using a level based approach.

The remainder of the questions on the paper were assessed using a 'points based' approach, where candidates gained marks by identifying, for example, a benefit or drawback related to the scenario and then gaining additional marks for giving appropriate expansion(s).

Introduction to the Overall Performance of the Unit

As in June 2017 some candidates coped well with the content, requirement and degree of difficulty, however it would appear that others struggle to cope with this type of external assessment.

Many candidates failed to read the questions carefully and therefore provided responses which did not answer the question set and were therefore not mark worthy.

Others failed to gain all of the marks available on short response questions by not looking carefully at the number of marks available for a question. The marks shown in brackets on the paper indicate the number of points required in the response.

As in June 2017 only a minority coped well with the long answer questions, where clear and detailed answers covering all sides of an argument or scenario were required and in many instances learners showed lack of knowledge of the overall specification content with many blank responses.

Individual Questions

Question 1

The scenario for this question was based around a home based accountant who travels around the country to visit clients. He works on a laptop on which he stores personal and financial information. The laptop is secured via a user name and password.

Q1a

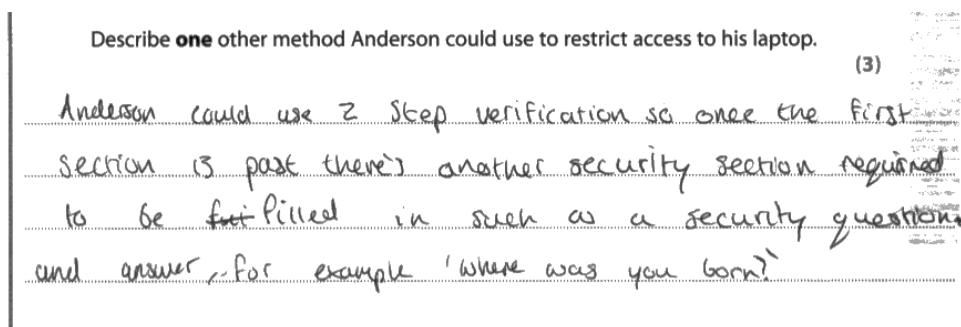
The question was considered to be very straightforward for the first question, however responses were amongst the weakest on the paper.

Candidates were asked to identify one additional method that could be used to secure access to the laptop.

The question was points based and candidates could gain one mark for identifying a method and an additional two marks for the description. Many candidates were able to identify a method, but were unable to 'describe' the method. Few candidates referred to the initial saving of the biometric/security question answer etc. and the consequent need to compare the input to the saved data before gaining access.

Some candidates identified biometrics which gained a mark, but then went on to consider the advantages, presumably based on their experience of the June 2017 paper.

The following response gained one mark for identifying the two step verification process. The candidate has identified the need for a response, but not that this would be saved on the laptop and compared to the input.



The following response gained all three marks.

The candidate has identified facial recognition for the first mark. They have then gone on to describe the need 'set a picture' i.e. save the image for the second mark and then 'check the user's face against the original and decide whether it matches' for the final mark.

Describe **one** other method Anderson could use to restrict access to his laptop.

(3)

Facial recognition. Assuming Anderson's laptop has a web cam, there are methods that allow the primary user to set a picture of his face, meaning everytime someone attempts to gain access, the device will check the user's face against the original and decide whether it matches. This would restrict access as anyone except Anderson would not be allowed access.

Q1b

This question required learners to explain two advantages of using Ethernet cables rather than wireless connections to connect a laptop to a home network. Wired and wireless connections and their impact on IT systems is explicit in the Specification and this should have been straightforward for candidates, however responses did not reflect this.

The question was points based, with one mark being awarded for each correct identification and an additional mark for a correct expansion of the identified point.

Although candidates did slightly better than in the previous question many gave vague responses, often linked to security, with very few identifying a more stable connection or greater bandwidth.

In some instances candidates gave more than two advantages without expansions and were therefore limited to only two marks. Candidates must be made aware that where two issues are requested only two can be credited.

The following response gained one mark.

The mark was awarded in the first part of the response for the correct identification of the signal not being affected by external factors. There were no marks awarded for the second part of the response.

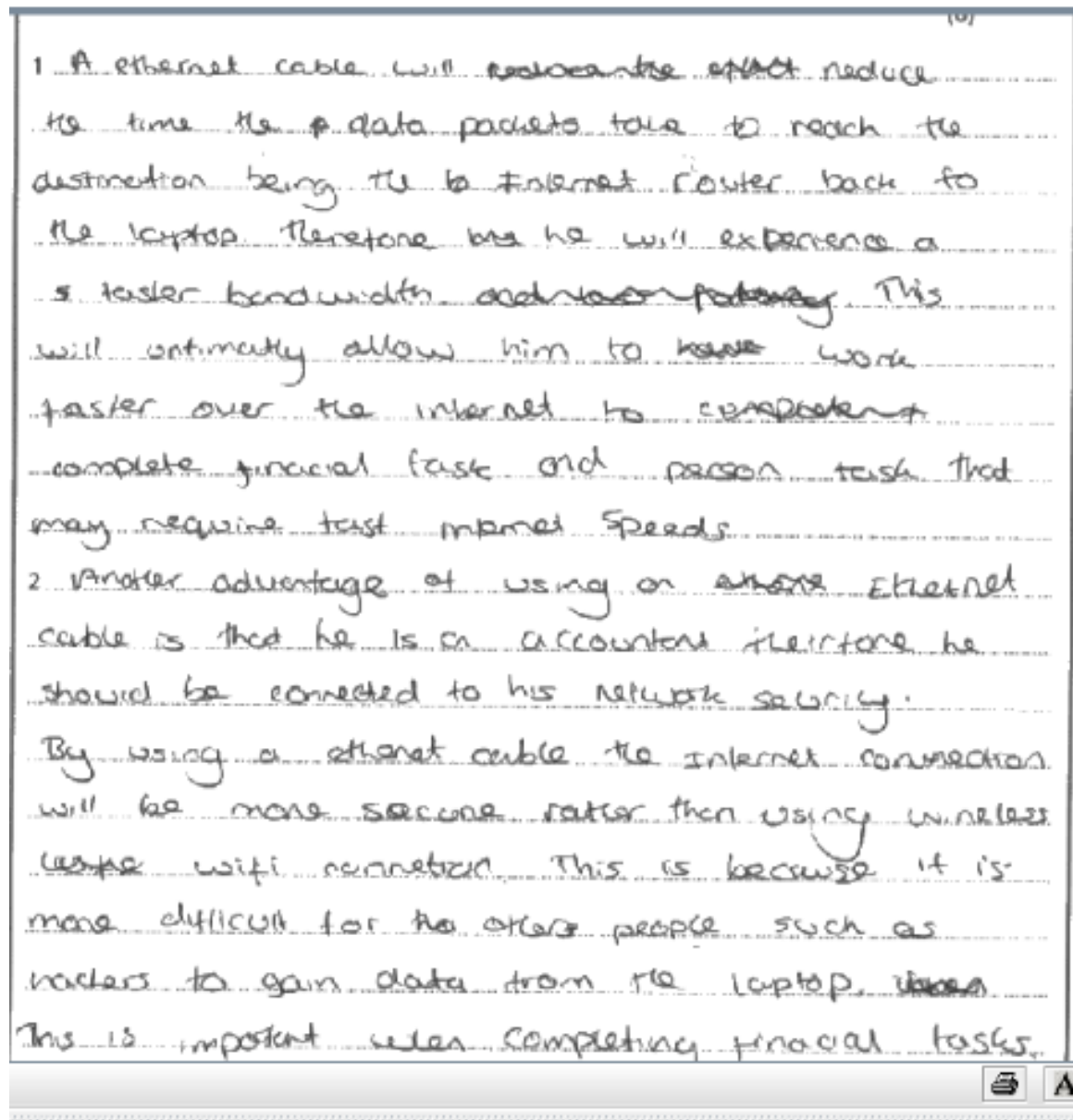
1. An ethernet cable allows for a better connection as there is no interruptions ~~with other~~ with other connections that wireless has. cable connects straight to his laptop as so only has one flow to go through the wire.

2. ethernet cable can be ~~very~~ inexpensive ~~and~~ and is not very pricey to get hold of a good one that does a great job. whereas getting wireless built in to a laptop can be much more expensive.

The following gained all four marks.

In the first part of the response the candidate has identified 'reduce time data packet takes to reach destination' i.e. faster data transmission and the expansion mark is awarded for 'will ultimately allow him to work faster' i.e. improved productivity. Given that positive marking is used the candidate is not penalised by the reference to 'faster over the internet'.

In the second part of the response the marks were awarded for improved security and the expansion of making hacking more difficult.



Q1c

The focus of the question was on the benefits of using a Virtual Private Network (VPN) and as in the previous question two advantages were required with an expansion mark for each.

Candidates regularly lost marks for citing a VPN as being 'private', clearly this is not mark worthy as it is given in the title. Similarly many candidates lost marks for more or less repeating the stem and saying that the VPN would allow him to access his files while travelling. Others lost mark by providing descriptions of encryption, not stating that the connection itself would be encrypted.

Some candidates considered costs, but not the reduced costs of using public networks rather than paying for secure mobile connections.

The following response did not gain any marks.

There is nothing mark worthy at all in the first part of the response and whilst the second part discusses costs these are very confusing and incorrect.

Explain **two** benefits to Anderson of using a VPN. (4)

- 1 The VPN will be private and only he will use it which gives him a stronger connection and faster overall network speed.
- 2 The VPN will also be cheaper for him because he is running the network connection off his own network from home which will cost less than having a personal data allowance on his laptop.

This response gained three marks.

Part one provides two marks for identifying a secure connection and an expansion of preventing unauthorised access.

The mark in the second part is awarded for 'tunnel around the connection'.

However a second mark is not awarded for 'privacy' on its own, however had the candidate cited 'privacy when using shared computers' an additional mark would have been awarded.

1 A virtual private network ~~provides~~ provides security, it is harder for a sig connection to ~~be~~ be intercepted by a hacker as it provides a tunnel ~~straight~~ which changes your IP ^{address} making it harder for hackers to intercept the connection and cause harm to the network.

2 A VPN also provides more ~~security~~ ^{that} ~~from~~ ~~data~~ ~~stable~~ ~~than~~ privacy because of the fact there is a tunnel ~~that~~ around the connection, this makes sure that the connection can't be watched by anyone so they won't be able to see ^{what} ~~what~~ Anderson is doing, providing him with better privacy ~~as~~ while on the connection.

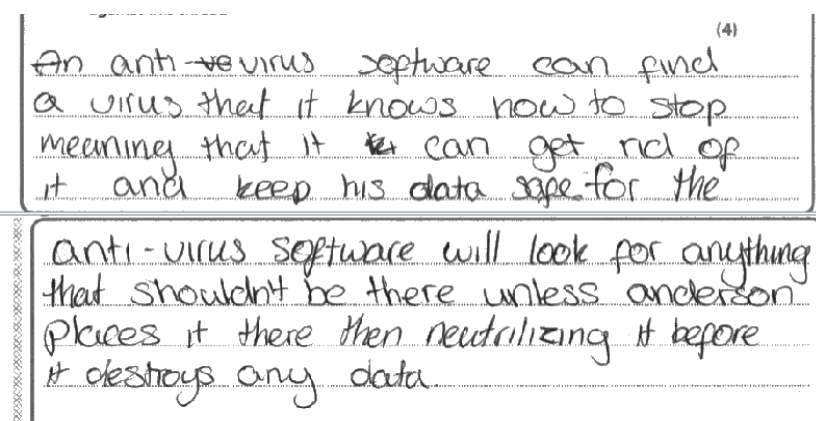
Q1d

The candidates were given an image showing a warning that a possible threat had been detected on a laptop and the question asked how the features of anti-virus software would protect against the threat.

A significant number of candidates responded by saying that the software would give a warning, clearly this is not mark worthy as this was given in the image.

A large number focused on the need for installing anti-virus software, rather than how the software would protect the computer. Few candidates showed any understanding of the anti-virus monitoring activity using a database of definition. The marks that were gained tended to be for scanning the files/computers and the user opting to quarantine or remove the virus.

The following response gained one mark. The mark was awarded for 'will look for anything that shouldn't be there', which is just enough to imply 'analyses the behavior of the program'. The rest of the response is very vague and not mark worthy.



This response gained four marks. The first sentence is a repeat of the question and therefore not mark worthy. However the candidate gained marks for:

- Request action from the user
- Give an option to quarantine the file
- Give an option to delete the file
- Scan the computer

(4)
Anderson's laptop anti-virus will protect against these threats by alerting him with a warning shown in the image, it will then give him options in which he can decide


what to do. He can quarantine it by locking it in a secure file, he can continue with the ~~the~~ threat if he trusts it's not a virus, or he can remove/delete the threat straight away. It will scan the whole computer to find any more of the threat and remove it.

Q1e

In this question candidates were asked to explain why websites use digital certificates, three marks being available for any three appropriate points. The processes and implications of using digital certificates are explicit in the Specification however responses were extremely weak, with many candidates failing to gain any marks.

The majority of candidates seemed to think that a digital certificate proves that a site is secure and safe for people to input their bank details etc. There were also many references to viruses. Very few referred to the authenticity/ownership of the website or that the information provided is genuine.

This response did not gain any marks. Typical of many responses the candidate has discussed security in some detail.

Websites use digital certificates to let a user know whether or not it is safe to input personal details to the site. If a website has a padlock  where their URL is then they will be certified that they are using customer details for the intended purpose. If not then the ^{site} safe is not safe for personal information or even to use as you may be prone to a virus just by visiting it.

This following response gained two marks. They have identified that the website can be trusted and that it is legitimate company website.

Websites use digital certificates to ensure that the website can be trusted. This prevents users using insecure websites which can install malware, spyware or adware onto the computer. Therefore, this protects users by ensuring they use the proper website of a company rather than illegitimate websites.

Question 2

The scenario for the question was a small high street store and the owner's plans to start using online systems to assist her business.

Q2a

With the focus on social media there were two parts to this question, status updates and data analysis tools and how they could be used to assist the business. The responses to status updates were significantly better than data analysis tools.

Many candidates correctly identified status updates being used to inform customers about new products / events etc. and they often gained the second mark for the impact i.e. increased sales and improved brand image.

Many candidates failed to gain any marks for data analysis tools by assuming that the analysis of the social media would include information about sales and profit. Others gave responses about the number of 'likes' or numbers of people 'following', these do not require data analysis tools and were therefore not mark worthy.

This response gained one mark in status updates for 'let them know what offers were on'. The data analysis tools response typically concentrates, incorrectly, on sales analysis.

<p>Status updates</p> <p>status updates are important for all businesses. firstly it is free, and also it allows them to reach out to many people at once and let them know what offers are on.</p>
<p>Data analysis tools</p> <p>Data analysis is again very important as it saves them time, not only this but allows them to see which product sells the most or which days they are busier and then from there they can see what they can do to improve.</p>

This response gained all four marks.

Status updates refers to 'recent' changes' and carries on to give a very good explanation of the impact on this in attracting her audience and increasing sales.

The candidate has correctly identified that data analysis tools will provide information about her customers including age, location and gender, they have then gone on to give a very good expansion about using the information to develop marketing campaigns and targeting her audience.

<p>Status updates</p> <p>Status updates will allow Ateema to post recent changes in her business. These changes could include new clothing lines or updated stock on specific products. Status updates will be viewable by her customers and this will provide them with the latest information on her business. If customers are regularly updated on the products Ateema sells, she is more likely to attract her audience and increase chances of sales.</p> <p>Data analysis tools</p> <p>Data analysis tools will provide Ateema with information regarding her customers. This could include ages, living locations and genders of her customers. This information could help her to develop marketing campaigns as she will know her target audience. When making more suited campaigns, she is more likely to attract customers and will therefore, increase the chance of sales.</p>

Q2b

The focus of this question was on the owner's intention to create a podcast and the impact of file types when making it available to download. Both file types and podcasts are explicit in the Specification, however responses were weak with many candidates gaining only one of the three marks available.

Where marks were gained it was often for recognizing the need for using a common file type, or a small file size, however few were able to expand upon these. There were many who cited 'using MP3', but no reasons were given. Compression was also a frequent response but not mark worthy in this context. It was also apparent that some candidates are unsure of what constitutes a podcast and many referred to video files.

It must be stressed to candidates that they should look carefully at the number of marks available for a question, in order to determine how many points are required in responses.

The following response gained one mark for 'not all devices will accept the download', however the expansion mark was not awarded as 'must ensure file size is compatible' is incorrect. Had the first mark not been awarded the candidate could have been credited for 'download takes a lot of storage ... reasonable file size'. However this is a second 'way' and as only one 'way' is asked for this cannot be credited.

When downloading the quality of the podcast may be affected so Aleema must ensure the file type she chooses ensures high quality even when compressed. Not all devices will accept the

download so Aleema must ensure her file size is compatible with most devices. Downloading takes up a lot of storage so Aleema must ensure she compresses the file so that it has a reasonable file size.

This response gains three marks. The candidate has identified the need for a universal file, so that it can be used on any device and the consequence of losing potential customers.

As the file will have to be uploaded and downloaded, it has to be made so that the file type is universal and useable

by any device. If it is not universal, then some of her followers may not be able to listen to it, which may lead to them not following Aleema at all, which may decrease her potential customers.

Q2c

The focus of this question was the move to creating an online store and subscribing to an online service to host the website and data.

Many candidates became confused and assumed that the service would take over the running of the business, including the online store. There was also an assumption that the host would take complete control, removing any decision making from the owner.

Many picked up on the 'subscription' element, however they then failed to consider any resultant savings that would be made and discussed the impact of the subscription on profits in isolation.

There were however several reasonable responses which identified that passing on the hosting of the website and data would leave the owner to get on with running other elements of her business to which she was better suited and also that the website would be maintained to a higher standard by the professionals who were acting as hosts.

The following response did not gain any marks and was typical of many seen. The candidate has confused the hosting of the website with running the online store as opposed to having just a high street store.

one way subscribing to online services may impact
Alema's business is that customer would be able
to view her products online rather going to her store
physical, which will benefit customers, also buy having
a store online customers are able to purchase goods
which can prevent them from physically going to
the store.

This response gained three marks for an explanation including reduced initial/set up costs, compared to subscription service, as hardware and software would not be needed

(3)

Subscribing to an online service may
create a good impact on the
business as she will not have
to maintain the site and data herself
which requires hardware components,
software and actual maintenance of the
site which could cost a lot more to
set up and run compared to a
subscription service.

Q2d

This was a very straightforward question describing how verification and validation would be used to ensure that a password entered is suitable.

There was clearly confusion between the two techniques by some candidates and many simply described the composition of a strong password. Very few were able to correctly identify appropriate validation rules and where they did were generally unable to identify that these were pre-set.

Responses for verification were generally better with many citing re-entering the password, although often the reason given was incorrect.

The following response was awarded one mark for identifying the need to re-enter the password in verification. The validation explanation is a weak attempt on the need for a strong password.

<p>Verification</p> <p>Verification would be used where the customer would enter their chosen password twice to ensure what they entered first is correct as to what they want as their password.</p>
<p>Validation</p> <p>Validation would be used to ensure the password is suitable and a good password where it is not too simple and easy to hack into.</p>

This response gained all four marks. The candidate has identified in the verification response the need to re-enter the password and also to ensure that the two entries match.

In validation they have identified that it needs to meet 'restrictions', implying pre-set rules and that it must be of the correct length.

The customer ~~would~~ would be asked to re enter their password to ensure the password is the same. This will ~~verify~~ verify the a password with the account meaning the format must stay the same.

Validation

The password must be valid which means that it ~~is~~ meets the restrictions. ~~For example~~ For ^{example} ~~holder~~ ^{holder} it may be required that the account ~~holder~~ ^{holder} ~~creates~~ ^{creates} a password that is 10-12 characters long, and includes a capital letters and a number.

Q2e

This question was the first level based question on the paper and many candidates gave vague, unstructured responses which failed to show any real understanding of the topic. Those who gave more structured responses tended to score higher marks.

The focus was on the impact on stock control of selling both instore and online.

Many candidates did not consider that the two different sales methods would have different impacts on stock control, let alone the impact of having two systems working simultaneously. Structured consideration of issues relating to the two systems would generally have put the responses into the middle mark band, discussing both together would have taken this up into the higher mark band.

This response was assessed in the lower mark band. There is a vague (implied) acknowledgement that it is possible to sell stock online that is actually not available, and a vague reference to the possibility of a physical stock check in store. However the response is very vague and shows no logical chains of reasoning, with very little technical language used.

When selling goods online, stock is constantly being updated to prevent the sale of goods which are unavailable. However, when selling stock in-store, ^{stock} ~~it~~ is not being consistently checked but it is not ~~too~~ much of a problem as the shop cannot sell what it doesn't have. If Aleema starts to trade using both in-store and online retail she may get confused with stock levels & may be unsure when she needs to re-order ~~things~~ stock because it is all over the place. This would then lead to Aleema not having enough stock that she has already sold and so ~~it~~ ~~would~~ the customer would need to wait for the stock to come to the warehouse before it is sent to them which may take a long time.

This response was assessed in the top mark band. The candidate has acknowledged that the sales will increase, giving a good explanation of why this will occur in terms of online sales. They have also discussed in some detail the need for an automated stock control system. There is a consideration of the sort of information that the system would provide and how this could be used to ensure supply meets demand, including a reference to a real time system. The candidate has also considered that both too much stock and too little stock can cause issues.

The response uses technical vocabulary and has presented a balanced range of relevant issues using coherent and logical chains of reasoning.

trading online will definitely increase the amount of stock sold as ~~more~~ ^{the} audience becomes wider for e.g. people will be able to purchase at night when the shop is closed. more ~~sales~~ ^{purchases} means more stock needed so an ~~an~~ automated stock control will be very useful. Here, it should tell you details on how much is ~~the~~ requested ~~by~~ and how much is currently being stored. The stock control should also automatically call for goods when demand is high. The stock control should be working in real time to display updated information about the product so Meena can know beforehand if there needs to be changes. If there is too much stock at the moment or too less this will cause problems, so the stock control should notify Meena beforehand.

Question 3

The scenario for Question 3 was based on a parcel collection and delivery service, where customers book online collections online. Collections are recorded using hand held devices and information is fed back to the company's database. Parcel tracking is possible using the company's website.

Q3a

The first question required candidates to draw a diagram showing the parcel collection and tracking system. 'Diagram' in some instances was very loosely interpreted by candidates to the extent that they produced only a written narrative of tasks to be carried out, unfortunately these were not considered mark worthy. Some candidates produced flow charts, whilst these were not generally appropriate, marks were awarded where possible.

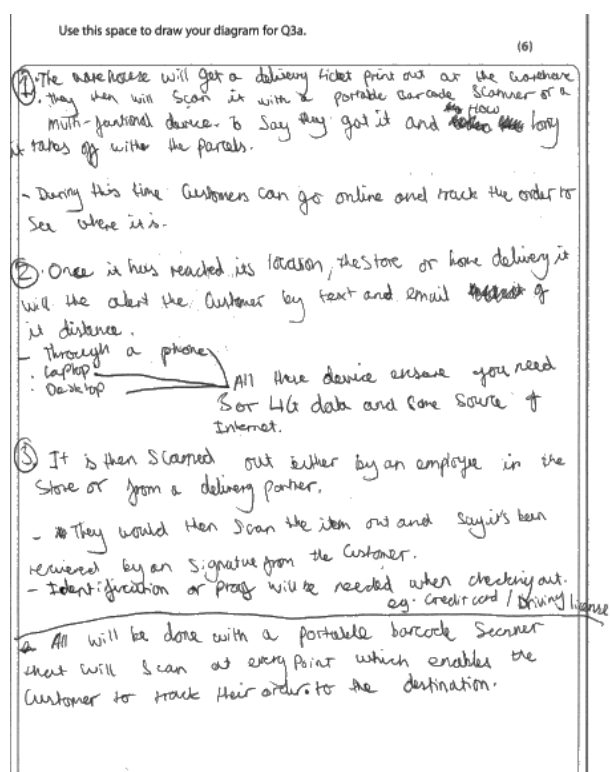
As with written responses, candidates who produced diagrams showing structure generally scored much higher marks than those who did not.

Candidates must look at the guidance given in the question as to what will be credited in the diagrams. In this instance candidates should have included:

- devices and systems
- connections between devices
- flow of data
- annotations.

Few included all aspects and where the flow of data was included it was often only shown to be in one direction, rather than a two way flow as would be expected in some parts of the system.

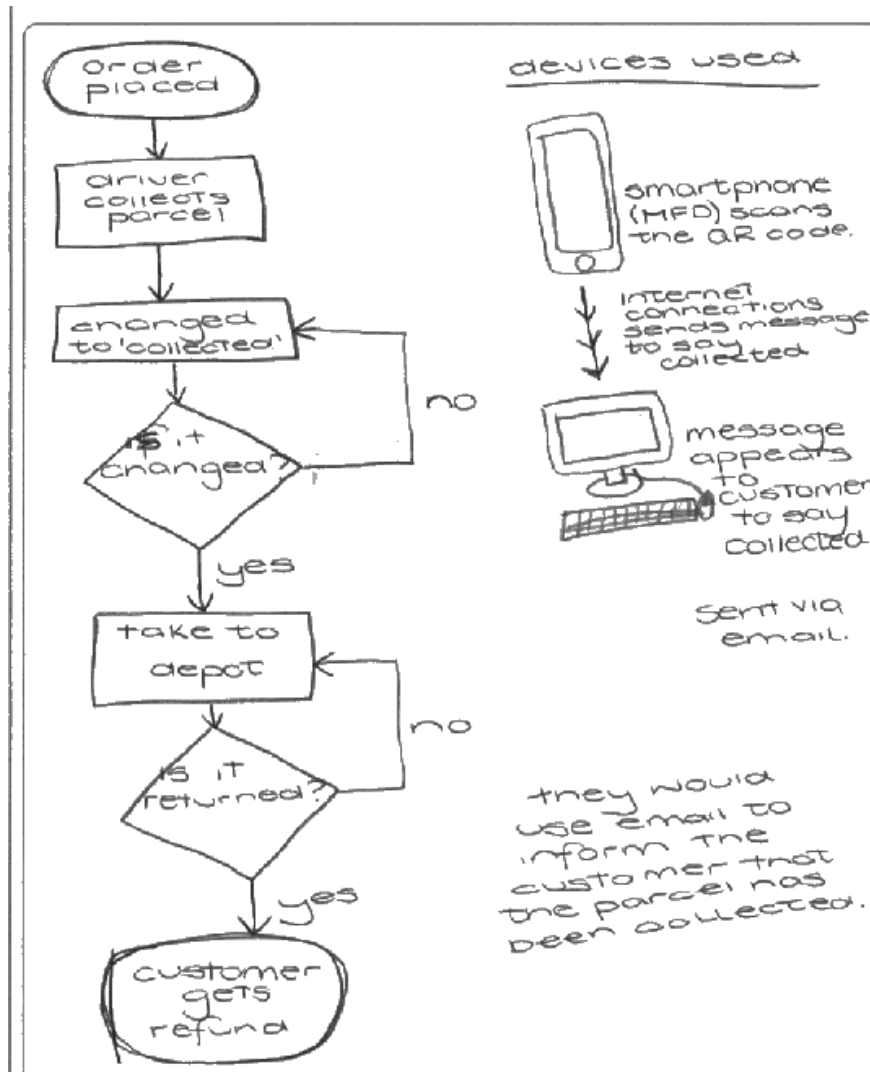
This candidate failed to gain any marks as a narrative does not constitute a 'diagram'



This response was placed in the lower mark band.

The flow chart shown on the left was not considered mark worthy, as no devices or systems are shown.

The diagram on the right identifies only the driver's device and the customer's computer. There is one reference to a connection between the two devices. There is no data identified or data flow.



Q3b

This question asked candidates to discuss the factors to consider when deciding on backup and recovery procedures and was one of the better answered questions on the paper.

The majority of the candidates managed to identify two or three of the factors to be considered, but discussions were not always clear and there was little evidence of technical language. A significant number did consider the location of back up and most considered security. Very few candidates were able to identify frequency, timing or types of backup as being the main considerations, with even fewer including any discussion on outsourcing as opposed to self-management.

Many candidates lost marks in this question by considering Manuel's personal data as opposed to his business data, and suggesting USB drives, and similar devices, as suitable for backing up commercial data.

The following response was placed in the lower mark band. The candidate has briefly mentioned cost of hardware and training. However there are no chains of reasoning and the overall response shows superficial understanding.

(6)

Manuel would need to consider hardware and ~~training~~ training involved with procedures. If Manuel decided to use hard disk drives then Manuel would need to consider hardware like wires needed ^{make} to backup. If he uses a new more complex system for employees to backup data or recover it they would need formal training to learn. Another is implementation, the cost of a new backup system would require purchases of hardware, ^{training} and the time to implement the system that they lose out of that day.

Manuel would need to consider training, hardware, implementation and cost.

This response was placed in the upper mark band. The candidate has considered several factors including timing, frequency, software, training and security. The discussion uses technical vocabulary and shows coherent and logical chains of reasoning and full awareness of the issues.

Firstly, he needs to consider when he wants the data to be backed up, as when data is being backed up, it might not be available, therefore he has to set a time during which he will not be utilizing the files and data. Furthermore he needs to also consider how often he would want his data to be backed up, whether it's everyday, once a week etc... In addition, he also has to consider what software he will utilize to back up, as some files might not be able to be backed up as they're not compatible with the software.

Also, another thing he has to consider is, if he requires any sorts of training in order to be able to utilize back up and recovery features successfully and correctly to make sure no data is lost in the process.

Q3c

Candidates were asked to explain what is meant by the term 'phishing'. In order to gain any marks they had to identify an attempt to gain personal/sensitive information, two additional marks being available for appropriate expansions, the majority gained two of the marks.

The following response did not gain any marks. Typical of many responses the language used is inappropriate e.g. the use of terms such as 'fake stuff' and 'scams', and not what would be expected at this level. The candidate has mentioned fake parcel collection/delivery companies but has not put this in the context of an attempt to gain personal information.

(3)

Phishing is like fake stuff. So fake parcel collection / delivery companies. ~~Phishing~~ Phishing is a way of gaining money through scams. To prevent falling into the trap users should use well known businesses or check reviews.

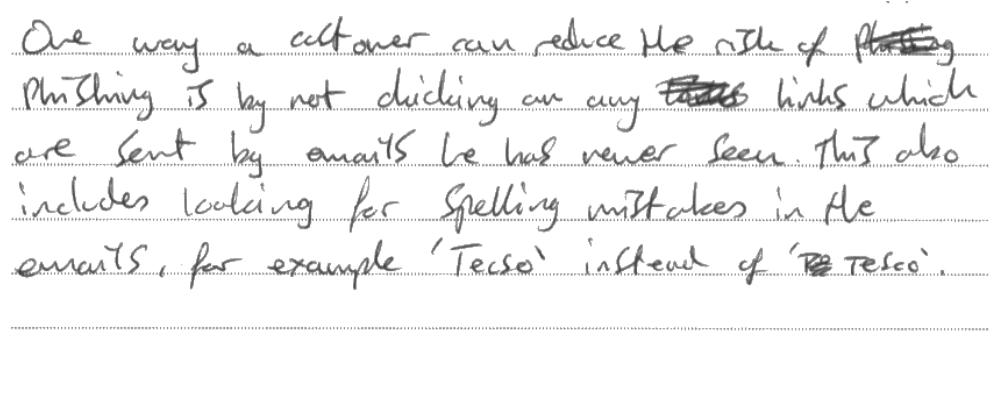
Three marks were awarded for the following response. The candidate has identified the attempt to gain personal information, by using a link in an email to carry out fraudulent activities.

Phishing is when an email or a message is sent out which can ~~either~~ contain a link to a website which may look official and asks someone to enter their personal details. This details will then be used to carry out fraudulent activities without the person knowing. It is common ~~to~~ with banking and e-commerce sites.

Q3d

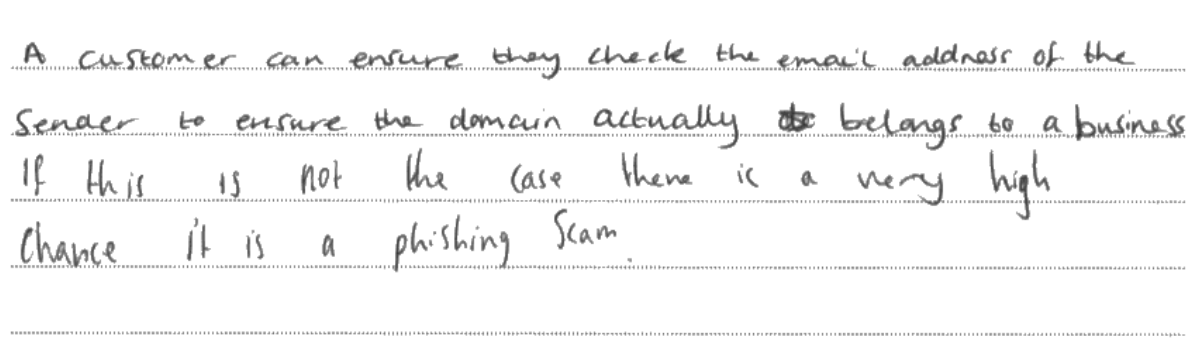
Given the knowledge shown about phishing in question 3c it was very disappointing to read the responses to this question, where candidates were required to describe one way to reduce the risk from phishing with many failing to gain any marks. The marks were in the main lost by candidates not giving clear responses which, once again, often used inappropriate terminology.

This response gained one mark. The candidate has gained the mark for 'not clicking on links... in emails... he has never seen'. The final part of the statement being very vague indeed but just enough to interpret as 'unsolicited emails'. The second part of the response could be considered as an attempt at reading the content to judge whether the contents are legitimate, however this would be a different marking point and not an expansion on the first issue identified and therefore not mark worthy.



One way a customer can reduce the risk of ~~phishing~~ phishing is by not clicking on any ~~links~~ links which are sent by emails he has never seen. This also includes looking for spelling mistakes in the emails, for example 'Tesco' instead of 'tesco'.

This response gained two marks. The candidate has clearly identified the checking of the email address (the source of the email) to ensure it is legitimate.



A customer can ensure they check the email address of the sender to ensure the domain actually ~~is~~ belongs to a business. If this is not the case there is a very high chance it is a phishing scam.

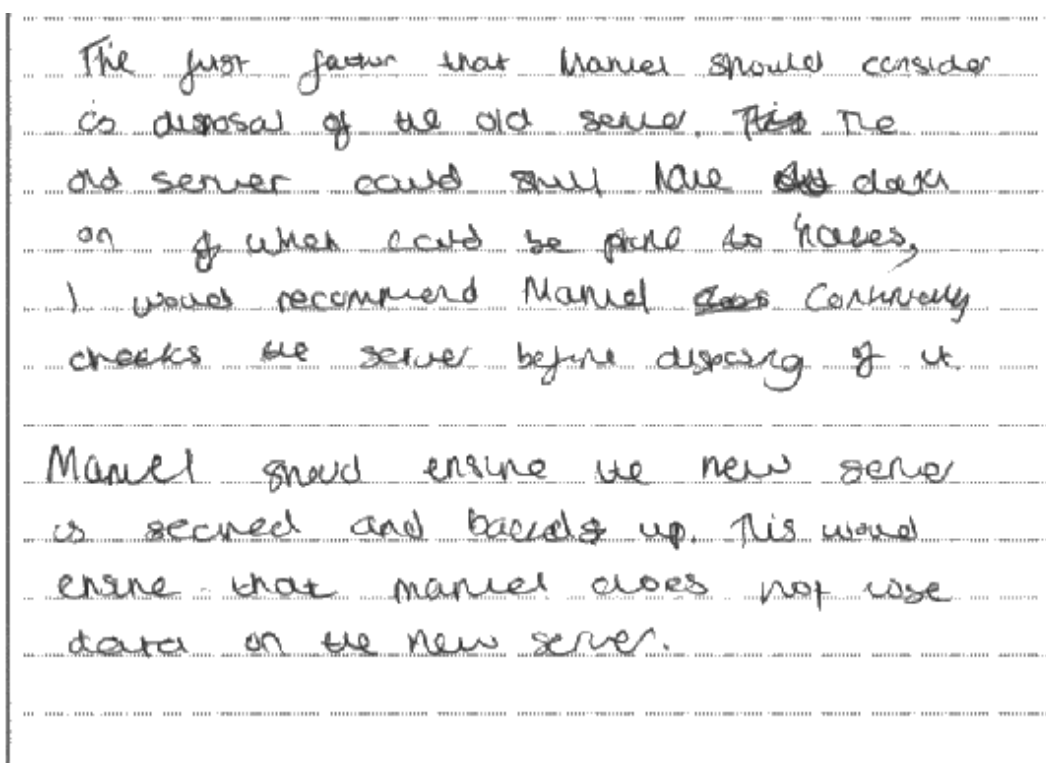
Q3e

This was a very poorly answered question. Candidates were asked to discuss the factors that should be considered when implementing a new server. The question clearly stated that the server had already been purchased and therefore costs and specification of the server were not relevant, unfortunately a large proportion of candidates focused entirely on these points

A small number of candidates produced good responses describing how parallel running or phased implementation would benefit the organisation, along with good discussions about the effect of downtime.

There were very few responses that considered any form of testing of the new system or planned implementation such as parallel running or phased implementation.

This response was placed in the lower mark band. They have identified issues relating to the disposal of the old server, and has briefly mentioned the need for security on the new server. There are no chains of reasoning and understanding is superficial.



The first factor that Manuel should consider is disposal of the old server. This is the old server could still have data on it which could be put to harm, I would recommend Manuel should check the server before disposing of it.

Manuel should ensure the new server is secured and backed up. This would ensure that Manuel does not lose data on the new server.

The following response was assessed at the lower end of the top mark band. The candidate has discussed security of the new server, backup procedures that should be put in place, location of the server and downtime during changeover all in some depth. Whilst some of these decisions may, in the 'real world' have been made in when purchasing the new server, the candidate has correctly identified them as factors to consider.

Accurate technical language has been used to support the arguments and logical chains of reasoning are used. To move to the higher mark band the learner would need to

1107

Mamad should consider the security that will be put in place to protect the server from attack. Firewalls ~~are~~ could be used to protect data by using a whitelist (nothing allowed except the things listed) or a blacklist (everything allowed except the things listed) firewall and by ~~putting~~ implementing access levels to restrict access to ~~certain~~ certain files by only being accessible to those with the permission. Another consideration is the backup procedures ~~for~~ ^{for} the data - he could run full or incremental backups either onsite or offsite ~~at~~ regularly to make sure data can be recovered if the new server goes down. Another consideration is the physical ~~the~~ location of the server - ~~if~~ if it was to be stored on site, Mamad would ~~want~~ need lots of free space for it whereas if he stored it offsite, he would need to implement a Wide Area Network (WAN) so that employees can access the data. Another consideration is the downtime - the website will be down, the data will be inaccessible and the shared resources will not be available

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while the new server is ~~being~~ being implemented ~~and~~ and the company will be on a standstill. This will result in a loss of sales and lower profits for that month. Overall, I think Mamad should implement a whitelist firewall, access levels, onsite backups and ~~physical~~ ^{onsite} physical storage. ~~and~~

Question 4

The Scenario for this question was based around a charity that supports students in developing countries, with unequal access to technology compared to those in more developed countries

Q4a

The question was level based with ten marks available for candidates to discuss the immediate and long term impacts of unequal access to IT.

They were given three areas to consider:

- communication networks
- up-to-date technologies
- educational resources.

Many candidates made a good attempt at the question and produced reasonable responses, achieving more success than on other questions in the paper. The higher level responses did not always cover all aspects, which was acceptable as they were able to discuss enough to show a full awareness of the issues in relation to the scenario.

Those that achieved the higher marks produced structured responses taking each of the areas given in turn and considering both medium and long term impacts for each. They used coherent chains of reasoning and technical vocabulary throughout.

Those that achieved marks in the lower mark band were able to identify some issues, although they often discussed issues which were not always relevant to the scenario, showing superficial understanding. Their responses tended to be either very brief or unstructured, longer, 'rambling' discussions.

The following response was marked in the lower mark band and is typical of many responses at this level, showing very superficial understanding.

They have more or less re-written the question in the initial sentences and then have gone on to identify factors relating to the lack of educational resources. There is a very limited reference to communication but no mention at all of communication networks. There is also a very limited reference to longer term issues i.e. careers.

Students in developing countries have to deal with the unequal access in their countries and as stated, it will have immediate and long term impacts, in the technology advancing world. The immediate impacts of not having access to information technology now could be that, they may not have access to interactive boards for education purposes, no virtual learning environments available to these students and a lack of understanding of the ~~most advanced~~ basic technologies. Not having long-term impacts could include ~~that they~~ that they will not be interested in technology as it keeps growing because the less developed countries will receive it, a long time after and this may lead to the lack of progression in using technologies as a social purpose to communicate with ~~family~~ family and friends all over the world, an educational purpose of learning information related to careers, they may want to pursue and for making sure their ~~the~~ knowledge on the most advanced technologies is the

best that, it could be. ^{Shayan's} ~~Shayan's~~ Charity will only benefit those in developing countries, to adapt with the changes of the world and provide them with the ~~the~~ best gateway going forward for them to better their lives and countries.

The following candidate was awarded marks at the top of the middle mark band. All three areas identified in the question have been discussed although in the main the discussions lack depth

They have discussed educational resources and the immediate and long term effects on both the students and the country as a whole. Towards the end of the response the candidate has added to the educational aspects linking it back to the out-of-date technologies. They have also discussed the short term effects on the students of lack of communication networks, the long term impact is not considered.

The student has added a conclusion, which is not necessary in a 'discuss' question, although clearly points made will be considered in awarding the marks.

~~The~~ ~~main~~ one of the long term impacts for students in developing countries is that they may not gain qualifications due to the fact that it's ~~harder~~ not possible for them to access educational resources, which would prevent them from being able to study for their exams. This ~~would~~ would affect the development of that country due to the lack of academically achieved students

~~Another~~ ~~long term~~ ~~impact~~ ^{another} ~~the~~ ~~short~~ ~~term~~ impact to the students would be that they may not be able to effectively communicate with their peers and teachers, ~~because~~ due to the lack of ~~accessing~~ ~~the~~ communication networks, so if they live far away the students would have to travel all the way to school in order to communicate which would be a big problem for students that live a long distance away from school.

The lack of up to date technologies means that the students

may have difficulty using their IT systems to complete work because ~~that those IT systems are out of date~~. IT systems ~~good~~ would just not be able to complete ^{the more} ~~more~~ advanced tasks the ~~that~~ students may need to do such as photo editing. ~~and so~~ these students ~~may~~ may not fully learn these skills within an IT system if the technology is out of date.

In conclusion, ~~there are a range of the effects would the~~ lack of access to basic ~~IT~~ information technology ~~would~~ would impact developing countries in the long run ~~more~~ ~~might~~ negatively in the long run.

Q4b

The question continued with the same scenario, however in this part candidates were required to evaluate Shayan's decision to use a Command Line Interface (CLI) rather than a Graphical User Interface (GUI) to access educational material stored on the charity's server, accessed via repurposed old computers.

Many candidates showed little understanding of CLIs with slightly more understanding of GUIs evident. However those that did understand focused on the difficulty of their use in general, missing the point given in the scenario of using old, repurposed computers. This generally limited them to the lower mark band.

In the main discussions focused on ease of use of GUIs as opposed to CLIs, very few candidates considered performance of the server or old computers and the benefits of CLIs in this scenario.

The question was level based with twelve marks available for candidates to evaluate Shayan's decision. As an 'evaluate' question a conclusion is expected to achieve marks in the middle and higher mark bands. However it should be noted that the evaluation does not necessarily have to be presented as a separate paragraph at the end of the response, candidates will be credited for evaluative comments made throughout the response.

It was pleasing to see that candidates who showed understanding were often willing to disagree with Shayan's decision and backed this up with well-reasoned discussions.

The following response was placed in the lower mark band.

The candidate has talked about the difficulties of using CLIs for inexperienced users, ease for more experienced users and overall ease of use of GUIs. There is no real reference to the scenario, just a general impression that users will be inexperienced.

A conclusion is present which disagrees with Shayan's decision based on 'most people not having experience of a CLI'. A conclusion is not required at this level, but the detailed included throughout the response is not enough to move the work up to the middle mark band.

A command line interface is ~~where~~ where a computer and a user communicate to each other using commands and set of instructions. Using a command line interface can be good as it can be quicker and easier to use prior to user has had experience. Therefore the user would just type the commands and it is a easy process. However using ~~an~~ a command line interface will only be quick if the user has had experience and they know the commands. Otherwise this will be more complex to use. A graphical user interface is very simple and user-friendly as it involves images which is easy to follow. ~~Therefore~~ Therefore no ~~previous~~ experience is needed as it is very easy to follow a graphical user interface. However with a GUI, there is a very limited amount of steps you can take as you will not need to ~~get~~ type much.

Overall I believe that Shajin should have chosen to use a graphical user interface as this would have been the most suitable and appropriate. This is due to the fact that most people will not have experience using a command line interface which will be hard to use.

The following was one of the best responses seen across the whole paper and was placed in the top mark band.

The candidate shows a good understanding of CLIs and GUIs. There is detailed discussion about the benefits of CLIs, initially not just from the point of ease of use but also on performance in relation to memory and processing speed, which is then linked into the scenario in terms of up to date computers. The candidate does go on to discuss ease of use and the drawbacks of CLI.

The discussion is structured and the wide ranging issues are presented in a coherent and logical order, using technical language throughout.

The conclusion, which is largely presented at the end is comprehensive and supports evidence presented in the main body of the response.

In my opinion the utilization of a command line interface has it's advantages and disadvantages.

Firstly, utilizing a command line interface is a lot quicker than trying to get a file if the user knows the location of it compared to a GUI, the command line interface is faster as it can locate a file straight away without having to go through menus like in the GUI.

Another advantage of a command line interface is that it's quite gentle on the system as it does not require a lot of memory & or processing speed in order to run. This can be very helpful in situations where the students do not have up to date computers, therefore utilizing this type of interface would be suitable as in ~~some~~ countries with unequal access, this can be the case. However, there are also some negatives to utilizing command line interface. First of all, in order to utilize the interface correctly a lot of commands have to be learned by the user, which can be a problem as the students might have a lack

of educational resources. Furthermore, due to a massive amount of comments that the user has to learn, it can be very overwhelming, which could cause some users to not want to use the interface as they're not able to learn the comments.

In conclusion, I think Rayson should have added a GUI as it's easier to use for beginners, which can often be the case because of a lack of educational resources in countries with unequal access to IT. This will also mean a lot of users would not be able to use the system, only experts, which should already know all of the educational content on the server, and the beginners also need the resources from the server, which not learn how to access the files.

(Total for Question 4 = 22 marks)

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