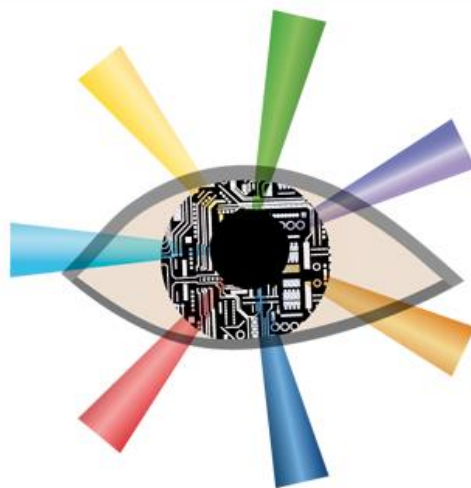


Mark Scheme (Results)

January 2018

BTEC Level 3 National in IT
Unit 1: Information Technology
Systems (31760H)



Information Technology

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications website at <http://qualifications.pearson.com/en/home.html> for our BTEC qualifications.

Alternatively, you can get in touch with us using the details on our contact us page at <http://qualifications.pearson.com/en/contact-us.html>

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson. Their contact details can be found on this link:

<http://qualifications.pearson.com/en/support/support-for-you/teachers.html>

You can also use our online Ask the Expert service at <https://www.edexcelonline.com>
You will need an Edexcel Online username and password to access this service.

IT	Level 3 National	31760H	Unit 1: Information Technology Systems
----	------------------	--------	--

Pearson: helping people progress, everywhere

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your learners at: www.pearson.com/uk

January 2018

Publications Code 31760H_1801_MS

All the material in this publication is copyright

© Pearson Education Ltd 2018

Unit 1: Information Technology Systems 31760H

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- All marks on the mark scheme should be used appropriately.
- All marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if a candidate's response is not worthy of credit according to the mark scheme.
- Where some judgment is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt about applying the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed-out work should be marked UNLESS the candidate has replaced it with an alternative response.
- Phonetic spelling should be accepted.

Specific marking guidance

The marking grids have been designed to assess learner work holistically. Rows in the grids identify the assessment focus/outcome being targeted. When using a marking grid, the 'best fit' approach should be used.

- Examiners should first make a holistic judgement on which band most closely matches the learner's response and place it within that band. Learners will be placed in the band that best describes their answer.
- The mark awarded within the band will be decided based on the quality of the answer, in response to the assessment focus/outcome and will be modified according to how securely all bullet points are displayed at that band.
- Marks will be awarded towards the top or bottom of that band, depending on how they have evidenced each of the descriptor bullet points.

Question Number	Answer	Mark
1a	<p>Award one mark for identification and one additional mark for each appropriate expansion to a maximum of two expansion marks.</p> <p>Biometrics (Fingerprints/Facial recognition/Voice recognition) / access tokens / knowledge based/security questions (1) which compares the input to the saved data (for the individual/Anderson) (1) only gives access to the laptop if they are the same (1)</p> <p>Two/multi factor authentication/ additional (verification) level of security/ a combination of (user name and password) and an additional question (1) which compares the input to the saved data (1) only gives access to the laptop if they are the same (1)</p> <p>Restricting physical access (1) at home/ door passes/ locked cupboard (1) while traveling/ locked (laptop) bag/ locked safe in hotel room (1)</p> <p>Do not accept answers relating to firewalls/anti-virus/encryption</p>	3

Question Number	Answer	Mark
1b	<p>Award one mark for identification and one additional mark for each appropriate expansion to a maximum of two expansion marks, for any from:</p> <p>Provides greater bandwidth/ faster (network) connection (1) which allows faster data transmission (of larger files) / allows more files to be transmitted at the same time (1) which will improve productivity/efficiency (1)</p> <p>Improved security (1) because it does not radiate signals/provides a fixed connection (1) which makes hacking more difficult/difficult to tap/no need to give out wireless access keys (1)</p> <p>(Wired) signal strength/ (network) connection is stable/ fixed (1) is not affected by environmental/external factors/ no interference (1) which can reduce packet/signal loss (1)</p> <p>(Wired) signal strength/ (network) connection stays constant over distance (1) distance from the router is not an issue (1) reducing the need for boosters (1)</p> <p>Additional guidance Responses must relate to the network, not connection to the internet</p> <p>Identification marks and expansion marks may be transposed</p> <p>Do not award improve productivity/ efficiency on its own</p>	6

Question Number	Answer	Mark
1c	<p>Award one mark for identification and one additional mark for one appropriate expansion point.</p> <p>The laptop connection will be secure/encrypted (1) even when using a non-secure/open network/ preventing unauthorised access to his laptop (1)</p> <p>Anderson can use public/shared networks securely (1) which could save him money compared to paying for high speed mobile data connections (1)</p> <p>Improved privacy when using shared computers (1) as all traffic is kept inside the secure VPN 'tunnel' (1)</p> <p>When traveling to foreign locations, can gain access to websites blocked by local service providers (1)</p> <p>Additional Guidance Identification and expansion and points may be reversed</p> <p>Identification and expansion may be from different marking points, accept as long as they are not repeats</p> <p>Do not accept encrypts data</p>	4

Question Number	Answer	Mark
1d	<p>A description of how Anderson's antivirus software will protect his computer. To include any four from:</p> <p>(Anti-virus software) monitors activity/scans computer/files (1) compares (activity) against a database of definitions (1) analyses the code/behaviour of the suspicious program (1) Determines the nature of the threat (1) Request actions from the user (1) Give option to remove the threat (1) Give option to quarantine the threat (1) Log user actions to deal with similar future threats (1)</p> <p>Additional Guidance Do not accept 'detects threats/virus' as this is given in image in question 'removes the threat/virus' on its own</p>	4

Question Number	Answer	Mark
1e	<p>Award one mark for identification and one additional mark for each appropriate expansion to a maximum of two expansion marks.</p> <p>To verify identity of website/verify that a company owns a website (1) and that the information is genuine/valid (1) so that it can be trusted by (internet users) (1)</p> <p>User's antivirus software will allow access to sites with certificates (1) as the certificate verifies that website is authentic/legitimate (1) and can be trusted by (internet) users (1)</p> <p>Provides encryption for communication (using encrypted attachment) (1) ensuring that (initial) data transmitted is protected (1) allowing for an encrypted response (1)</p> <p>Do Not Accept – answers relating to showing website is secure eg Padlocks or https</p>	3

Question Number	Answer	Mark
2a	<p>Status updates</p> <p>To provide information to customers on new products (1) to enhance sales (1)</p> <p>To provide regular updates on brand/products/events (1) to maintain/increase customer interest in products and brand/to maintain high profile of brand (1)</p> <p>Data analysis tools</p> <p>To identify demographic/trends (1) to enable targeted marketing/personalised ads/to adapt her business (to suit clientele) (1)</p> <p>Additional guidance</p> <p>Data analysis tools Do not accept</p> <p>Answers relating to sales – this information would not be provided via this system Responses about number of likes etc – this is provided without the need for data analytics</p>	4

Question Number	Answer	Mark
2b	<p>An explanation of how making the podcast available to download will affect her choice of file type. To include any four from:</p> <p>She will need to choose a common/popular file type (1) to ensure it is compatible with as wide a range of devices as possible (1) which will maximise her audience (1) and reduce the need for users to install additional software/codecs (1)</p> <p>File size should be small (to help upload/ download) (1) Need to choose a common/popular file type eg MP3 (1) Maximise her audience (1) need to maintain quality (1)</p> <p>Additional guidance</p> <p>Do not accept responses relating to compression</p>	4

Question Number	Answer	Mark
2c	<p>Award one mark for the identification and one additional mark for each appropriate expansion to a maximum of two expansion marks.</p> <p>Low/reduced start-up costs (1) as there is no need to buy hardware/software/employ specialist staff (1) but offset against subscription charges(1)</p> <p>Will not have to maintain the site/ site is maintained for Aleema (1) no need to employ/train specialist staff/ leaving Aleema to get on with running her business (1) saving ongoing costs which will be balanced/offset against subscription charges (1)</p> <p>The site will be maintained to a higher standard than Aleema could provide (using the hosts expertise) (1) which would promote Aleema's business in a good light (1) leading to increased business/sales/customer interest (1)</p> <p>Lack of control of content/data (1) as are reliant on third party security (1) however they (third party) may be more subject to cyber-attacks (because of nature of their business) (1)</p> <p>Service level agreements / terms and conditions (1)</p> <p>Aleema would have to develop company policies for protecting data (1) which may require additional staff training (1) requiring staff overtime or company downtime (1)</p> <p>Additional guidance</p> <p>Do not accept – have to 'pay for service' on its own, this is implicit in 'subscribe'</p> <p>Accept any other valid response</p>	3

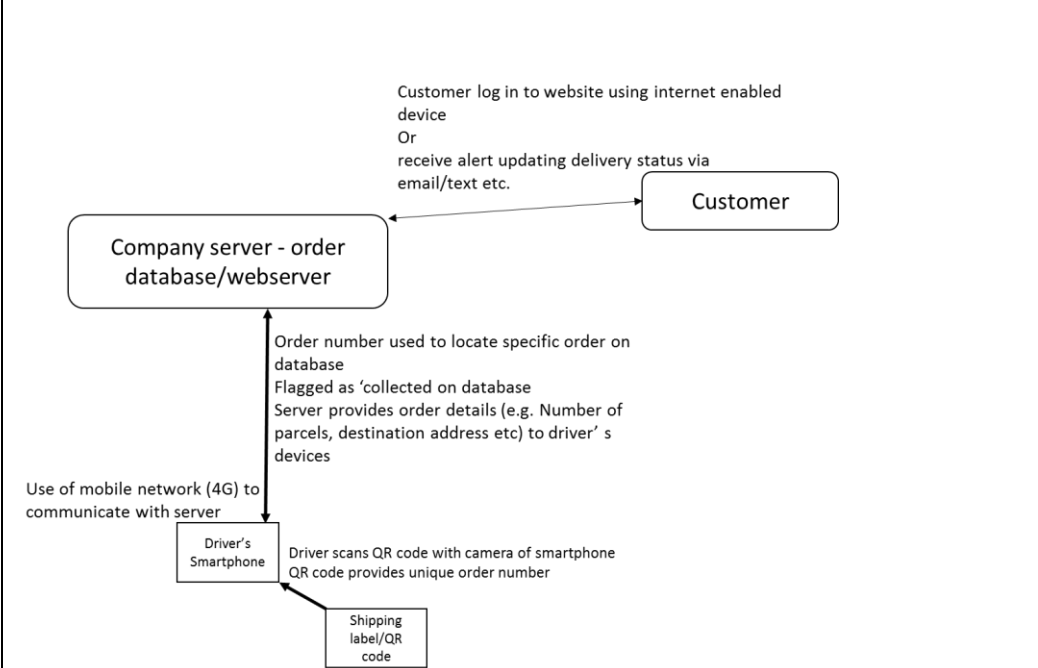
Question Number	Answer	Mark
2d	<p>A description of how verification and validation may be used in a password field such as:</p> <p>Verification</p> <p>The password will be entered twice/asked to be re-entered (1) compared to ensure they match (1)</p> <p>Validation</p> <p>The password will be checked against pre-set rules (1) to ensure correct length/ ensuring a mix of characters (1)</p> <p>Additional guidance</p> <p>Accept any other valid response</p>	4

Question number	Indicative content	
2e	<p>An analysis of the impact on working practices when introducing a web store</p> <p>Analysis may include:</p> <ul style="list-style-type: none"> • Setting up systems to ensure that the stock information is updated and correct based web sales and shop sales so website is not showing 'in stock' if not. • Need to deal with web orders in a time efficient manner to ensure to avoid back log and ensure customer satisfaction • May need to increase minimum stock levels to help deal with the additional load of web orders – this would impact on stock costs. • Stock take and re-ordering may have to happen more frequently as the increased sales generated by the website may mean her stock is reduced more quickly than previously. 	
<p>Mark scheme (award up to 6 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes*.</p>		
Level	Mark	Descriptor
Level 0	0	No rewardable material.
Level 1	1–2	<p>- Technical vocabulary is used but is not used appropriately to support arguments in relation to the issues of the question.</p> <p>- issues are identified but chains of reasoning are not made leading to a superficial understanding of the relative importance of issues to the scenario</p>
Level 2	3–4	<p>accurate technical vocabulary is used to support arguments but not all are relevant to the issues of the question</p> <p>- a consideration of relevant issues using logical chains of reasoning but does not reflect upon their relative importance to the given scenario</p>
Level 3	5–6	<p>- fluent and accurate technical vocabulary is used to support arguments that are relevant to the issues of the question</p> <p>- A balanced and wide ranging consideration of relevant issues using coherent and logical chains of reasoning that shows a full awareness of their relative importance to the given scenario</p>

Question number	Indicative content
-----------------	--------------------

3a

A diagram of a potential system/integration of IT systems and connections used to meet the requirements of the scenario.



Example response – note this is indicative only. Credit should be given for a diagram that meets the requirements of the given problem.

Diagram may include:

Devices:

- Driver's device – e.g. Smartphone, tablet, handheld computer
- Camera (of smartphone)/scanner
- Server/webserver/ company network

Connections and users:

Driver connected to web server using mobile networks (allow wi-fi if annotation justifies its use)
Customer connected to webserver for alert (internet/login, alert by txt)

Data flow:

The diagram should show descriptions of the data flow between components and show the direction in which data is exchanged. E.g. that the QR code is used to get an order number, the data for the order is then transferred to the drivers device to aid delivery.

Mark scheme (award up to 6 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes*.

Level	Mark	Descriptor
Level 0	0	No rewardable material.
Level 1	1-2	<p>Diagram provides partial coverage of appropriate devices. Storage/Data sharing and connection types are used to meet some of the requirements of the scenario.</p> <p>Diagram includes annotations of the data that will be shared among the components of the system.</p>
Level 2	3-4	<p>Diagram provides coverage of mostly appropriate devices. Storage/data sharing and connection types are used to meet the majority of the requirements of the scenario, but these may not always be the most efficient.</p> <p>Diagram includes mostly accurate annotations of the data that will be shared among the components of the system</p>
Level 3	5-6	<p>Diagram provides thorough coverage of appropriate device. Storage/data sharing and connection types are used to fully meet the requirements of the scenario.</p> <p>Diagram includes detailed and accurate annotations of the data that will be shared among the components of the system.</p>

Question number	Indicative content
3b	<p>A discussion of the considerations when choosing back-up and recovery procedures.</p> <p>Discussion points should be make use of the given scenario and provide specific examples where appropriate. The discussion may include:</p> <p>Volume of data</p> <ul style="list-style-type: none"> • How much data is to be backed up • Will this volume impact on the running of the network. • What medium will be used to back-up the data. Can it hold the correct amount of data, does it have sufficient read/write speeds for the volume to be backed up and recovered <p>Frequency and timing of backup</p> <ul style="list-style-type: none"> • Must it be done during non-business hours • How often – will it be the same for all data/files/systems? <p>Location of data</p> <ul style="list-style-type: none"> • Where will the backup be held? – Off site, on site. • Who has access to the location? • How will the physical security and safety of the back-up be protected against theft, physical damage (fire, flood etc.) <p>Type of backup and recovery</p> <ul style="list-style-type: none"> • Raid systems to allow continuous running and 'on the fly' data recovery • Use of Hotsites, cold sites • Types of back up - Full, incremental, differential etc. and the benefits/drawbacks of these to Manuel <p>Outsource vs self-managed</p> <ul style="list-style-type: none"> • Outsourced considerations: <ul style="list-style-type: none"> ○ Third party has access to data ○ Cost ○ Skills (dedicated data back-up companies will be highly skilled at their job) ○ Location – Data will be off site so will be protected if Manuel's server is physically damaged. ○ Service level agreements ○ If company goes out of business data may be lost/unrecoverable ○ Require active and reliable internet connection to backup data • Self-managed considerations <ul style="list-style-type: none"> ○ Cost ○ Skills of employees <p>Implementation</p> <ul style="list-style-type: none"> • Timescales • Training • Cost

Mark scheme (award up to 6 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes*.

Level	Mark	
	0	No rewardable material
1	1-2	<p>Technical vocabulary is used but it is not used appropriately to support arguments, in relation to the issues of the question.</p> <p>Issues are identified but chains of reasoning are not made, leading to a superficial understanding of the relative importance of issues to the scenario.</p>
2	3-4	<p>Accurate technical vocabulary is used to support arguments but not all are relevant to the issues of the question.</p> <p>There is consideration/ explanation of some relevant issues using logical chains of reasoning, but does not reflect on their relative importance to the given scenario.</p>
3	5-6	<p>Fluent and accurate technical vocabulary is used to support arguments that are relevant to the issues of the question.</p> <p>There is a wide ranging consideration/ explanation of relevant issues, using coherent and logical chains of reasoning that shows a full awareness of their relative importance to the given scenario.</p>

Question Number	Answer	Mark
3c	<p>Award one mark for identification and one additional mark for each appropriate expansion to a maximum of two expansion marks.</p> <p>Identification mark An (unauthorised) attempt to gain personal/sensitive information (1)</p> <p>Expansion marks by impersonating a trusted organisation (1) such as sending a fake email with a link (to a fake website) (1) with the intention of gaining money/ fraudulent activity/ identity theft (1) this is a type of social engineering (1)</p> <p>Additional guidance Must have the identification before any of the subsequent marks can be given</p>	3

Question Number	Answer	Mark
3d	<p>Award one mark for identification and one additional mark for each appropriate expansion.</p> <p>Never send sensitive data over in an email (1) legitimate companies will never request details in this way (1)</p> <p>Do not follow links from unsolicited emails (1) as these may lead to sites/sources that could be harmful (1)</p> <p>Check the source of the email carefully (1) to ensure it comes from where it says it does (1)</p> <p>Use filtering settings in email (1) which will block/ screen the spam (1)</p> <p>Read the contents of the email to make a judgement as to whether the contents are legitimate (1) and delete anything suspicious (1)</p> <p>Additional guidance Do not award marks for responses relating to firewalls or anti-virus</p>	2

Question number	Indicative content
3e	<p>A discussion of how the planning of the installation of a new server would impact on Manuel's business.</p> <p>Discussion points should be make use of the given scenario and provide specific examples where appropriate. However the discussion may include:</p> <p>Timescales:</p> <ul style="list-style-type: none"> • How long will the installation take? – can it be scheduled for a time when the company is less busy • Is there a target completion date? • If an external company is installing the server, is there a penalty if they do not complete on time? • If Manuel's IT staff are installing the server might other tasks get in the way of the work and increase the time it takes to install? <p>Testing</p> <ul style="list-style-type: none"> • Has testing been planned thoroughly • They will need to ensure the server/operating system will work with/be suitable for current IT needs • Has the server been tested for: <ul style="list-style-type: none"> • Security – intrusion testing, 'sniffer' software, data leakage etc. • Stability • Software/hardware compatibility <p>Planned Implementation</p> <ul style="list-style-type: none"> • Type e.g. parallel running / phased implementation • Setting up files / user accounts <p>Downtime</p> <ul style="list-style-type: none"> • Will the changeover result in the current system being down for any length of time? • Is there a contingency planned for potential or unplanned downtime? • Parallel running during testing and handover to ensure website is not down as this will reduce business <p>Security</p> <ul style="list-style-type: none"> • Data during changeover • Setting up systems on new server <p>Replacement</p> <ul style="list-style-type: none"> • integration with current systems <p>Disposal of old server</p> <ul style="list-style-type: none"> • environmental issues • security issues <p>Training</p> <ul style="list-style-type: none"> • IT Staff • Users • Cost <p>Note: The server has already been purchased, therefore the cost of the server and compatibility are not factors</p>

Mark scheme (award up to 10 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes*.

Level	Mark	
	0	No rewardable material
1	1-3	<p>Technical vocabulary is used but it is not used appropriately to support arguments, in relation to the issues of the question.</p> <p>Issues are identified but chains of reasoning are not made, leading to a superficial understanding of the relative importance of issues to the scenario</p>
2	4-7	<p>Accurate technical vocabulary is used to support arguments but not all are relevant to the issues of the question.</p> <p>There is consideration of relevant issues using logical chains of reasoning, but does not reflect on their relative importance to the given scenario.</p>
3	8-10	<p>Fluent and accurate technical vocabulary is used to support arguments that are relevant to the issues of the question.</p> <p>There is a balanced and wide ranging consideration of relevant issues, using coherent and logical chains of reasoning that shows a full awareness of their relative importance to the given scenario.</p>

Question number	Indicative content
4a	<p>A discussion of how unequal access to IT impacts on individuals.</p> <p>Discussion points should be make use of the given scenario and provide specific examples where appropriate. However the discussion may include:</p> <p>Education:</p> <ul style="list-style-type: none"> • Limited access to up-to-date materials may mean that students are disadvantaged in terms of the quality and accuracy of their knowledge. • Lack of IT infrastructure may limit the choice of educational course they can follow. <p>Employment</p> <ul style="list-style-type: none"> • They may not be able to develop desirable skills such as technical or programming skills which could lead to better paid jobs • Lack of infrastructure may mean they cannot access specific technologies that allow them to apply for employment or to be able to subscribe to working styles (remote working etc) • Lack of access to information may restrict them from the application process or mean they are not aware of potential jobs. <p>Financial</p> <ul style="list-style-type: none"> • A lack of 'public' infrastructure may mean that access to internet and other technologies is restricted to those that can afford expensive mobile technology • An inability for an area to support high speed online services, may mean that the economy of that area suffers as they can no compete with other countries in a global market. <p>Access to technology</p> <ul style="list-style-type: none"> • Making use of older computers and potentially slower wireless infrastructures may mean: <ul style="list-style-type: none"> ○ digital services and products developed in these countries cannot compete in terms of performance with other services available on the internet ○ The hardware and software available to individuals cannot adequately make use of common services

Mark scheme (award up to 10 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes*.

Level	Mark	
	0	No rewardable material
1	1-3	<p>Technical vocabulary is used but is not used appropriately to support arguments in relation to the issues of the question.</p> <p>Issues are identified but chains of reasoning are not made leading to a superficial understanding of the relative importance of issues to the scenario</p> <p>Does not link arguments to the given scenario</p>
2	4-7	<p>Accurate technical vocabulary is used to support arguments but not all are relevant to the issues of the question</p> <p>A consideration of relevant issues using logical chains of reasoning but does not reflect upon their relative importance to the given scenario</p> <p>Considers the various elements of the question and but does not always link arguments to the given scenario</p>
3	8-10	<p>Fluent and accurate technical vocabulary is used to support arguments that are relevant to the issues of the question</p> <p>A balanced consideration of relevant issues using coherent and logical chains of reasoning that shows a full awareness of their relative importance to the given scenario</p> <p>Carefully considers the various elements of the question and Links arguments to the given scenario</p>

Question number	Indicative content
4b	<p>An evaluation of how a decision to use Command Line Interface (CLI) rather than Graphical User Interface (GUI).</p> <p>Discussion points should be make use of the given scenario and provide specific examples where appropriate.</p> <p>The initial discussion may include consideration of benefits and drawbacks of CLI as an interface:</p> <p>Benefits of CLI</p> <ul style="list-style-type: none"> • Lower resources required so suitable for older equipment PU may not have high processing speeds or advanced GPUs • Server and client will require less bandwidth to communicate (as not transmitting graphical data) so makes it suitable for poorer/mobile internet connections • Usually accessed using a 'terminal' window so likely to reduce potential problems with compatibility • Only requires keyboard to interact/does not need additional peripheral such as mouse. <p>Drawbacks of CLI</p> <ul style="list-style-type: none"> • A less intuitive interface than GUI as commands are specific to each system where as there are common structures and conventions used in GUI (e.g. a house icon for 'home') • Users will have to learn specific commands, if they have limited experience with IT this may prove difficult to use • The language of the commands may be a barrier. E.g. the system command may be in English which may not be the user's first language • Not suitable for access on some devices that use onscreen keyboards or alternative inputs • Limited in adaptability for users with additional needs • Limits the type of product/service that can be offered via the system. E.g. most materials will need be downloaded and used/run locally <p>The discussion should draw comparison to GUI which may cover:</p> <ul style="list-style-type: none"> • Performance • Ease of use • Accessibility • User needs <p>The learners should present a conclusion about Shayan's decision to choose CLI over GUI which should be supported by evidence from their discussion</p>

Mark scheme (award up to 12 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes*.

Level	Mark	
	0	No rewardable material
1	1-4	<p>Technical vocabulary is used but is not used appropriately to support arguments in relation to the issues of the question.</p> <p>Issues are identified but chains of reasoning are not made leading to a superficial understanding of the relative importance of issues to the scenario</p> <p>No conclusion is presented or is generic</p>
2	5-8	<p>Accurate technical vocabulary is used to support arguments but not all are relevant to the issues of the question</p> <p>A consideration of relevant issues using logical chains of reasoning but does not reflect upon their relative importance to the given scenario</p> <p>An attempt at a conclusion is presented that links arguments to the given scenario but is not justified in that it does not reflect the careful consideration of both sides of the argument.</p>
3	9-12	<p>Fluent and accurate technical vocabulary is used to support arguments that are relevant to the issues of the question</p> <p>A balanced and wide ranging consideration of relevant issues using coherent and logical chains of reasoning that shows a full awareness of their relative importance to the given scenario</p> <p>A fully justified conclusion is presented that links arguments to the given scenario and that reflects the careful consideration of both sides of the argument leading to a reasoned decision</p>

Ofqual



Llywodraeth Cymru
Welsh Assembly Government



Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE