Mark Scheme (Results day)

January 2019

Pearson BTEC Level 3 - IT

Unit 1: Information Technology Systems
31760H

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Unit 1: Information Technology Systems

General marking guidance

- All learners must receive the same treatment. Examiners must mark the first learner in exactly the same way as they mark the last.
- Marking grids should be applied positively. Learners must be rewarded for what they have shown they can do, rather than be penalised for omissions.
- Examiners should mark according to the marking grid, not according to their perception of where the grade boundaries may lie.
- All marks on the marking grid should be used appropriately.
- All the marks on the marking grid are designed to be awarded. Examiners should always award full marks if deserved. Examiners should also be prepared to award zero marks, if the learner's response is not rewardable according to the marking grid.
- Where judgement is required, a marking grid will provide the principles by which marks will be awarded.
- When examiners are in doubt regarding the application of the marking grid to a learner's response, a senior examiner should be consulted.

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.

BTEC Next Generation Mark Scheme Template

ICT Unit 1
January 2019

Question Number	Answer	Mark
1a	Award **one** mark for identification and **one** additional mark for appropriate expansion. • (Security) patches not provided by manufacturer (1) leads to increased vulnerability to hackers (1) • Up-to-date virus checkers may not be compatible (1) leading to increased risk of infection (1) • Hackers are aware of the software vulnerabilities (as OS has been around for a long time) (1) leading to an increased likelihood of being attacked (1) **Additional guidance** Identification and expansion marks maybe transposed.	4

Question Number	Answer	Mark
1b	Award **one** mark for identification and **one** mark for an appropriate expansion point. • Hardware incompatibility \ device drivers may not be available for new peripherals (1) may not be able to use new printer/scanner/other hardware / may be restricted to using old hardware (1) • Software incompatibility (1) may not be able to install new software / new software may not work on the laptop (1) • Likely to have limited storage capacity (1) may not be able to store large files for college work / graphic arts course files will be large (1) • Likely to have a slow processor (1) may have issues uploading/downloading files/accessing internet (1) • Slower/less powerful WiFi hardware (1) will work at slower speeds/increase download/upload time (1) **Additional guidance** Identification and expansion marks maybe transposed.	4

Question Number	Answer	Mark
1ci	Award **one** mark for identification and **one** additional mark for appropriate expansion. • access to source code (1) allows customisation to meet (Joseph's) specific needs (1) • Joseph will be able to work with other like-minded users to 'pinpoint' customisation (1) which is not likely with a large manufacturer (where changes are dictated by 'mass' requirements) (1) • bugs in the code are often spotted and corrected more quickly / more expedient than in proprietary software (1) as the users are not restricted by large organisation's procedures (1) • can be more secure (1) as the people who are using the software have an inherent need to spot and correct errors quickly/hackers tend to target proprietary software (1) • ongoing support will be free of charge (1) as it is provided by users/community, not the manufacturer (1) **Accept any other relevant phrasing/wording**	4

Question Number	Answer	Mark
1cii	Award **one** mark for identification and **one** additional mark for appropriate expansion. • must ensure OS is compatible with existing application software (1) or he will incur additional cost of replacing it / may have to spend time making the software work with the OS (1) • some (specialised) application software may not run under open source OS (1) which may make it difficult for Joseph to carry out tasks for this course (1) • there may not be as many features included (1) which may make it difficult to carry out specific tasks / cost of additional features (1) • support for the OS relies on the ongoing attention of the users/community (1) which may mean that the support may be sporadic / stop without warning (1) • must ensure that the OS is compatible with the college systems (1) accessibility to the files generated by the college systems may be difficult (1) **Accept any other relevant phrasing/wording**	4

Question Number	Indicative content	
1d	Answers will be credited according to the learner's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Answers may cover some/all of the indicative content but should be rewarded for other relevant answers. Learners discuss the factors that that make a Graphical User Interface (GUI) suitable for use in mobile devices such as tablet computers. **Icons** Allow users to understand what the Apps / functions or other instructions do without having any detailed knowledge of computing terminology There is no need to write long instructions/code, which can introduce errors Don't have to remember coding/formatting Allow beginners/non IT literate users to understand and get started using the devices straightaway Are intuitive Are not language dependent (e.g. English & French Icons are likely to be very similar) Very similar between different types of devices allowing for transferability **Navigation aids** Drop down menus incorporated to speed up/aid navigation around/between the screens Forward/back navigation allow users to move freely/quickly between screens/windows **Touch Screen** GUI maximises benefits of touch screen technology (although can be used with 'onscreen keyboards etc) Touch screen technology enables users to 'point'/select using a finger/stylus. Enabling easy/fast access to Apps etc. **General points** Ideal/easy accessibility/interaction for users with a wide range of impairments with impairments e.g. visual impairments/users who struggle/are unable to use a standard keyboard. Can be adapted e.g. colour/font size/ positioning/sizing of icons to aid impairments. More suitable for small screens rather than command line interface.	6

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	• Demonstrates isolated elements of knowledge and understanding • There will be major gaps or omissions • Few of the points made will be relevant to the context in the question • Limited discussion which contains generic points • Little or no consideration of different aspects
Level 2	3-4	• Demonstrates some accurate knowledge and understanding • There will be some gaps or omissions • Some of the points made will be relevant to the context in the question, but the link will not always be clear • Displays a partially developed discussion which considers some different aspects • There will be some consideration of how they interrelate
Level 3	5-6	• Demonstrates mostly accurate and detailed knowledge and understanding • There will be minor gaps or omissions • Most of the points made will be relevant to the context in the question, and there will be clear links • Displays a well-developed and logical discussion which clearly considers a range of different aspects • Clearly shows how they interrelate

Question Number	Answer	Mark
2a	Award **one** mark for identification and **one** additional mark for an appropriate expansion. Automated system (1) to capture data (1) for future analysis (1)	2

Question Number	Answer	Mark
2b	Award **one** mark for a benefit and **one** additional mark for an appropriate expansion, for any **two** of: Systems are robust (1) so that they that can be used in unpleasant / harsh environments (1) They can be set up in dangerous / difficult to access locations (1) less risks to humans health and safety (1) Can be set up to monitor over very long periods / monitor 24 hours a day (1) because there are factors that affect humans (1) Readings are very accurate / more precise than human measurements / record minute detail (1) which leads to better/more accurate data analysis (1) **Additional Guidance** Identification and expansion marks may be transposed	4

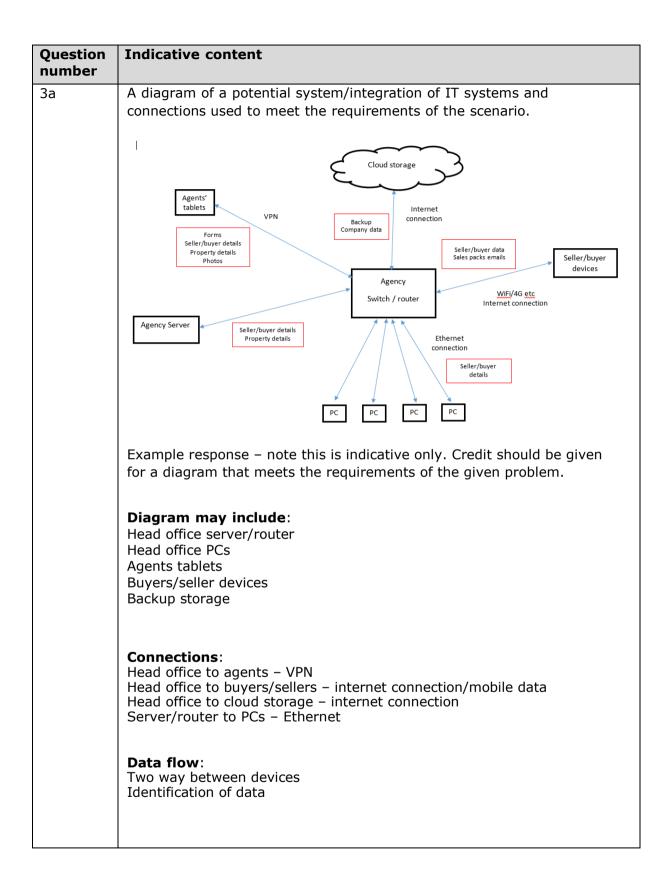| Question Number	Indicative Content	Mark
2c	Answers will be credited according to the learner's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Answers may cover some/all of the indicative content but should be rewarded for other relevant answers. • A sensor used to take readings • Regular intervals • Examples of weather conditions such as temperature, precipitation, etc • Interface box / ADC is used to convert analogue signals to digital signals that can be used by the computer • A spreadsheet/ database is used to store the data • An internal hard disc/memory card is used to store collected data, for future use • Time-stamped • Value is associated with time/date • Future analysis Accept any other relevant phrasing/wording	6

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	• Demonstrates isolated knowledge and understanding, there be major gaps or omissions • Generic statements may be presented rather than a linked description • Answer is not logically ordered and with significant gaps.
Level 2	3-4	• Demonstrates mostly accurate knowledge and understanding, with few minor omissions/any gaps or omissions are minor • Some linkages are made so that a description is partially present • Displays a description of the procedure that has a structure which is mostly clear, coherent and logical with only minor steps missing.
Level 3	5-6	• Demonstrates accurate and thorough/detailed knowledge and understanding • Linkages are consistently made so that a complete description is present

| | | | • Displays a description that has a well-developed structure which is clear, coherent and logical. | |

Question Number	Answer	Mark
2d	Award **one** mark for identification and **one** additional mark for an appropriate expansion: (More/improved data transmission systems) provide wider geographical coverage (1) enabling signals to be sent/ accessed from more remote locations (1) (Improvements in data transmission systems) provide greater broadband width / enable larger quantities of data to be transmitted simultaneously (1) reducing the frequency of sampling (1) Transmission systems are more reliable (1) ensuring that the data will be sent regularly (1) Hardware technologies have improved (1) devices have more functionality to receive and send data (1) **Additional guidance** Identification and expansion marks may be transposed. Accept any other relevant phrasing/wording	4

Question Number	Indicative content
2e	Answers will be credited according to the learner's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Answers may cover some/all of the indicative content but should be rewarded for other relevant answers. Candidates may discuss how the basic functions of both types of software help Maria complete the tasks – the content given is indicative and not prescriptive. **Spreadsheet features** Analytics • stores numerical data and use formulae in table format • can change data values and automatically recalculate • produce statistics e.g. averages, standard deviation • incorporates a range of functions Display • basic table format can be enhanced, using a range of tools, to show data clearly • wide range of graphs and charts available • automatic updates if data changes **Word processing features** • simple text entry • formatting tools to enhance text/improve layout/text wrap • insertion of graphs etc • templates **Using both together** Basics would allow copy & paste/ import from spreadsheet into WP It is possible, on a range of office productivity software, to 'link' the software and e.g. if a change was made on a spreadsheet table, information would be updated on a table in WP

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	- Demonstrates isolated elements of knowledge and understanding - There will be major gaps or omissions - Few of the points made will be relevant to the context in the question - Limited discussion which contains generic points - Little or no consideration of different aspects
Level 2	3-4	- Demonstrates some accurate knowledge and understanding - There will be some gaps or omissions - Some of the points made will be relevant to the context in the question, but the link will not always be clear - Displays a partially developed discussion which considers some different aspects - There will be some consideration of how they interrelate
Level 3	5-6	- Demonstrates mostly accurate and detailed knowledge and understanding - There will be minor gaps or omissions - Most of the points made will be relevant to the context in the question, and there will be clear links - Displays a well-developed and logical discussion which clearly considers a range of different aspects - Clearly shows how they interrelate

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:
Head office server/router
Head office PCs
Agents tablets
Buyers/seller devices
Backup storage

Connections:
Head office to agents – VPN
Head office to buyers/sellers – internet connection/mobile data
Head office to cloud storage – internet connection
Server/router to PCs – Ethernet

Data flow:
Two way between devices
Identification of data

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	Diagram provides partial coverage of appropriate devices. Storage/Data sharing and connection types are used to meet some of the requirements of the scenario. Diagram includes annotations of the data that will be shared among the components of the system.
Level 2	3-4	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. Diagram includes mostly accurate annotations of the data that will be shared among the components of the system
Level 3	5-6	Diagram provides thorough coverage of appropriate device. Storage/data sharing and connection types are used to fully meet the requirements of the scenario. Diagram includes detailed and accurate annotations of the data that will be shared among the components of the system.

Question Number	Answer	Mark

3b	Award **one** mark for the main factor and **one** additional mark for an appropriate expansion point relevant to the main factor
	
	• Ease of use/intuitiveness (1)
	    o Obvious places for users to enter data (1)
	    o Have logical flow through the questions to help users navigate (1)
	    o Appropriate controls, e.g. buttons/radio buttons/tick boxes/ drop down menus (1)
	    o Pop-up instructions to help users (1)
	    o Consistency layout/navigation/fonts/colours (1)
	
	• Accessibility (1)
	    o Provide text alternatives for non-text content (1)
	    o Make it available to assistive technologies (1)
	    o Allow screen reader (1)
	    o Use sufficient contrast to make things easy to see (1)
	    o Make text readable/understandable/concise/simple (1)
	
	• Functionality/ Performance (1)
	    o Consider alternative ways of accessing/entering data e.g. onscreen keyboard/attached conventional keyboard (1)
	    o Allow for saving on an on-going basis (1)
	    o Compatibility (1)
	
	• Accuracy of data (1)
	
	    o Provide ways of reviewing responses (1)
	    o Provide ways of undoing/editing (incorrect) responses (1)
	    o Error reduction methods e.g. input masks, presence checks, etc (1)
	
	• Security (1)
	    o Protect sellers data (1)
	    o Loss of tablet (1)
	    o Data Protection Act/ GDPR (1)
	
	Accept any other relevant phrasing/wording
		6

Question Number	Answer	Mark
3c(i)	A description of the use and implications of codecs when transmitting video files. Award **four** marks for any of: • Codec is a file/piece of software (1) • Codec is needed to view the video (1) • Video files are very large (1) • Codec reduce the size/compress the video file (1) • Will improve viewing when using a slow connection/ bandwidth (1) • Affects the quality of the video (1) • (Lossy) codec save larger amounts of space compared to (lossless) (1) • Software compatibility (1)	4

Question Number	Indicative content
3c(ii)	Answers will be credited according to the learner's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Answers may cover some/all of the indicative content but learners should be rewarded for other relevant answers.
	Learners discuss the factors that should be considered when setting up the online sales packs.
	Online access to packs • compatibility with a wide range of platforms e.g. tablet/smart phone / laptop / PC • compatibility with operating systems e.g. Windows / IOS • consideration of file types/sizes for download
	Easy of use of packs/ Accessing pack content: • navigation aids e.g. buttons between pages / back / forward / home page • menus • consistency e.g. layout /fonts/colours • accessibility features
	Security / data protection • Personal data in pack • Only available via website • Firewall
	Cost • development cost • ongoing/running cost • staff training cost

Mark scheme (award up to 8 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	1-3	- Demonstrates isolated elements of knowledge and understanding - There will be major gaps or omissions - Few of the points made will be relevant to the context in the question - Limited discussion which contains generic points - Little or no consideration of different aspects
Level 2	4-6	- Demonstrates some accurate knowledge and understanding - There will be some gaps or omissions - Some of the points made will be relevant to the context in the question, but the link will not always be clear - Displays a partially developed discussion which considers some different aspects - There will be some consideration of how they interrelate
Level 3	7-8	- Demonstrates mostly accurate and detailed knowledge and understanding - There will be minor gaps or omissions - Most of the points made will be relevant to the context in the question, and there will be clear links - Displays a well-developed and logical discussion which clearly considers a range of different aspects - Clearly shows how they interrelate

Question Number	Indicative content	
4a	Answers will be credited according to the learner's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Answers may cover some/all of the indicative content but should be rewarded for other relevant answers. Learners analyse the implications of replacing old computers with wireless enabled laptops. **Background/starting point** Old/ varying ages of computers will have caused problems e.g. hardware and software incompatibility, limited storage capacity, slow processors. Problems also due to using a 'mix' of outdated hardware and software. Will hope that new will overcome these types of problems. Similarly using all wireless rather than all wired will hopefully reduce issues. **Wired v Wireless** Wired networks provide a more secure connection. Wired connections give agency full control of who can access the network/data. As the admin offices will be dealing with a great deal of personal/sensitive data this is of paramount importance. Will need to increase security if move (admin offices) to wireless. Wired connection are generally more reliable / faster, wireless connections are subject to interference from a variety of sources. Range is generally not an issue with wired connections which may be able to be placed further away from the server than wireless machines. **Hardware** Positioning of PCs is currently restricted by the wired connection points. Laptops: • users will have more flexibility to move around within the office/rearrange office • can take laptops around the building • disposal of old PCs Users may not like using laptops / ergonomics should be considered – with a PC have more choice in terms of hardware e.g. larger screens, different types of keyboard / ergonomic etc (with/without number pad)	10

Cost
Will have to work within the budget provided by the grant and will need to consider:

Initial cost of purchasing the hardware / new laptops / spec for spec laptops more expensive than PCs.

May be costs of updating software, existing software on 'old' PCs may be out of date and incompatible with new laptops and modern operating systems

May be some increased costs for software licences depending on any new software purchased. However in most instances site licences will have been purchased and the licences can be transferred from PCs to laptops.

Unlikely to be any/minimal retraining costs (unless new software is necessary).

May be increase in ongoing costs as wireless networks are generally require more maintenance.

Implementation timescale/testing/downtime

Will be very little downtime when replacing computers. Data from PCs is stored on / transferred to server.

However will need to test system to ensure that system can cope with the wireless traffic. Need to do this to minimise disruption – schedule appropriately.

Changes/extension to network in future - moving to a wireless provide the agency with more flexibility in the future if there is an increased need for computers.

Security

Portability of laptops will lead to need for increased security measures, both physical and software.

- who will be responsible for the laptops
- what happens at the end of the day/when office is unoccupied – will laptops be locked away
- need to review/set up security policy

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	Descriptor
Level 0	0	No rewardable material
Level 1	1-4	- Demonstrates isolated knowledge and understanding, there be major gaps or omissions - Breaks the situation down into component parts and a few of the points made will be relevant to the context in the question - Limited analysis which contains generic assertions rather than interrelationships or linkages
Level 2	5-7	- Demonstrates some accurate knowledge and understanding, with few minor omissions/any gaps or omissions are minor - Breaks the situation down into component parts and some of the points made will be relevant to the context in the question - Displays a partially developed analysis which considers some interrelationships or linkages but not always sustained.
Level 3	8-10	- Demonstrates mostly accurate and thorough/detailed knowledge and understanding - Breaks the situation down into component parts and most of the points made will be relevant to the context in the question - Displays a well-developed and logical analysis which clearly considers interrelationships or linkages in a sustained manner

Question Number	Indicative content	
4b	Answers will be credited according to the learner's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Answers may cover some/all of the indicative content but should be rewarded for other relevant answers. Learners analyse the implications of the disposal of IT systems **<u>Backup</u>** Must ensure that all data is backed-up. Need to determine backup procedures. Data may be on central storage e.g. network/server, or on individual devices e.g. PCs/laptops/tablets etc **<u>Data deletion</u>** The company will need to ensure secure data disposal from all digital devices. May include: ▪ sensitive company private / confidential / financial information ▪ customer /staff personal data – i.e. data that needs to comply with the Data Protection Act / GDPR regulations Data deletion methods Deletion of files /reformatting a hard disk Data destruction software Physical destruction **<u>Equipment disposal and recycling</u>** Recycling • sale or donation to other organisations or individuals, need time & resources to organise/pay for professional services to do it. • recycling parts of the equipment • minimises environmental impact Disposal • safely disposing of hazardous waste • minimising the amount of equipment wasted **<u>Legal requirements</u>** Data Protection Act GDPR WEEE EU directive Environment Act Waste acceptance criteria (WAC) **<u>Other considerations</u>** Who is going to carry out the work? • would in-house staff have the required skills? • specialist data destruction contractor?	12

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	Descriptor
Level 0	0	No rewardable material
Level 1	1-4	• Demonstrates isolated knowledge and understanding, there be major gaps or omissions • Breaks the situation down into component parts and a few of the points made will be relevant to the context in the question • Limited analysis which contains generic assertions rather than interrelationships or linkages
Level 2	5-8	• Demonstrates some accurate knowledge and understanding, with few minor omissions/any gaps or omissions are minor • Breaks the situation down into component parts and some of the points made will be relevant to the context in the question • Displays a partially developed analysis which considers some interrelationships or linkages but not always sustained.
Level 3	9-12	• Demonstrates mostly accurate and thorough/detailed knowledge and understanding • Breaks the situation down into component parts and most of the points made will be relevant to the context in the question • Displays a well-developed and logical analysis which clearly considers interrelationships or linkages in a sustained manner