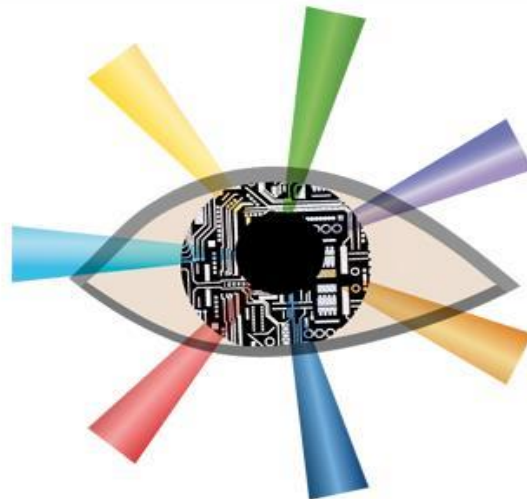# Mark Scheme (Results)

January 2020

BTEC Level 3 Nationals

Information Technology

Unit 1: Information Technology Systems
31760H

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Unit 1: Information Technology Systems

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.

BTEC Next Generation Mark Scheme

IT Unit 1
January 2020

Question Number	Answer	Mark
1ai	Award **one** mark for each drawback up to a maximum of **two** marks: Not everyone will: • have the necessary IT literacy skills (1) • have access to IT facilities / internet (1) • be able to afford IT equipment (1) • if site went down no access to online version (1) • might be more difficult to read if accessing on a mobile device (1) Accept any other valid response.	2

Question Number	Answer	Mark
1aii	Award **one** mark for each benefit up to a maximum of **two** marks: • improves availability for those who are housebound / opens up availability to a wider/younger audience / more inclusive (1) • e-newsletter can be viewed wherever/whenever to suit members of the community (1) • enables readers to share stories/items (with friends/followers) (1) • digital features can be incorporated (e.g. videos, links, social media sharing buttons) (1) • quicker **updates** on events • accessibility features for visually impaired (zoom feature) • benefits to the environment (1) - if the response clearly refers to 'environmental issues for the community, e.g. because people don't cause litter in the community by throwing away the newsletter / printed copy'. **Note** Do not award for general environmental issues, e.g. less printing and less paper required, because this refers to the company producing the printed copy. Accept any other valid response.	2

Question Number	Answer	Mark
1bi	Award up to **two** marks a linked explanation, such as: • the file size will be reduced (1) • the image will be compressed (1) • the e-newsletter will render more quickly (1) • it will be faster to download/ upload the image/email (1) • it is less likely that it will be rejected by the FCG's' email provider (1) Accept any other valid response.	2

Question Number	Answer	Mark
1bii	Award up to **two** marks a linked explanation, such as: • the quality of the JPEG images will not be as good (as bitmap) (1) and the JPEG may appear pixelated/ distorted (1) Accept any other valid response.	2

Question Number	Answer	Mark
1c	Award up to **two** marks for each of **two** linked explanations, such as: **SMTP –** manages outgoing emails / used for sending emails (1) from server to server (1) until it reaches its recipients (mail) server (1) **IMAP** – used for receiving emails/ incoming emails (1) stores emails on server (1) allowing access from multiple devices/synchronises email across devices (1) Accept any other valid response.	4

Question Number	Answer	Mark
1d	Award **one** mark for each point up to a maximum of **four** marks: • to recognise and handle new virus strains (1) • New viruses are constantly being created / virus threat is constantly evolving (1) • Content is compared against (an existing) database of virus definitions (1) • If new virus is not in existing list, it will not be detected (1) • antivirus software developers constantly monitor the threat landscape (1) • antivirus software developers will update the definitions database when any new virus is found (1) Accept any other valid response.	4

Question Number	Indicative content
1e	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** how FCG can ensure that the social media site provides a positive user experience for the online community. The page / group /website must provide a 'good' user experience: • must be easy to use / intuitive – users' familiarity / knowledge of using social networking will range widely. Users will not be active/keep using if they encounter problems/ difficulties • must be accessible on different platforms • meet the needs of all users. Accessibility – may be users with special accessibility requirements, must ensure these are built in • update the page regularly with current content • availability of the site (no downtime) The online community must be set up so that: • a moderating team oversees that 'rules of behaviour' are set and adhered to • users are aware of what is/isn't acceptable to post to avoid any offence / inappropriate material being posted • the privacy of users is given high priority. Need to consider who is going to be given access. Can be 'closed group' or extended so that anyone can access • users are aware of potential dangers of using social media • take measures to ensure the security of users' data. Users must be confident that the security has been given high priority when setting up Users should: • communicate with each other in real time • raise issues about issues/events in local community • add in links to websites /blogs etc which may be helpful

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

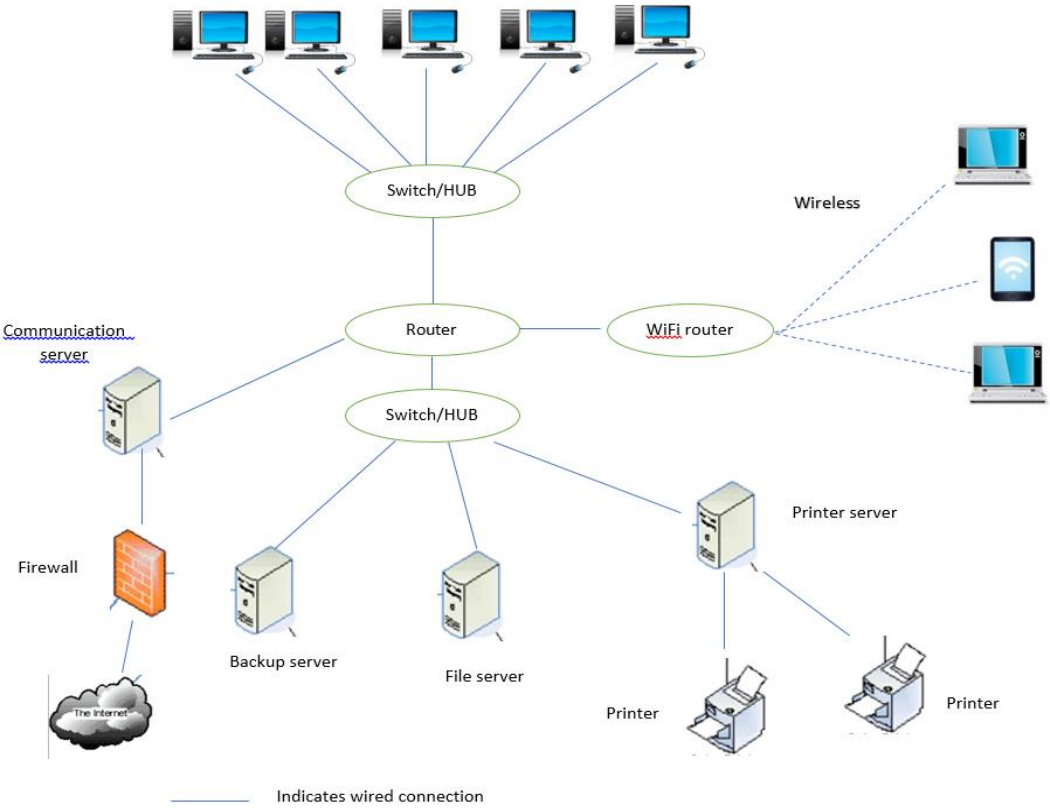| Question Number	Answer	Mark
2a	Award up to **two** marks for each of **two** linked explanations, such as: • Unauthorised users can see / guess the four-digit number as it is being entered into the key pad (1) an ID card system does not provide this visual detail, reducing the risk of unauthorised access (1) • Authorised entry can only be gained by physically having the card (1) therefore unauthorised users would need to steal/copy/borrow the card (1) • ID cards have in built 'technology' (1) making them difficult to copy/requiring specialist equipment to enable copying (1) • Authorised users should/will be aware of the risks/outcomes of lending cards to others (1) reducing the likelihood of them passing on their cards (1) • If ID card is lost / stolen the college can deactivate the card (1) preventing anyone finding the card gaining access (1) • An ID card is unique to each individual (1) can monitor who accesses the server room / which provides evidence of whose ID entered the server room (1) • An ID card often includes a photo of the person to whom it has been issued (1), providing a means of checking that the user of the card is the person authorised to do so (1) Accept any other valid response.	4

Question Number	Answer	Mark
2b	Award **one** mark for each point up to a maximum of **four** marks: • Database of usernames and passwords created (1) • on entry password matched the username (1) • access allowed if they are the same/match (1) • re-enters password if no match / access denied (1) • system allows limited number of attempts (1) • account locked when unsuccessful attempts exceeds attempts allowed (1) Accept any other valid response.	4

Question Number	Answer	Mark
2c	Award up to **two** marks for each of **two** linked explanations, such as: • A shared area can be set up in which documents can be saved / stored centrally with updated filenames (1) allowing others to access/edit /comment on the documents (1) • Version control can be maintained (1) to ensure that all users are working on the same version of the document (1) • Manage groups (1) so only invited members of the group will have access to the group resources (1) • (As they are working on the same network), users will have access to the same software (version) (1) no compatibility issues (1) • Will be able to use real-time communication software (virtual meetings /chat facilities) (1) without having to be in the same physical location (1) • co-authoring features provided by applications running on the network (1) which will enable students to work together in real time (1) • students can set up a group calendar/project plan for the project (1) which will help them monitor progress and meet deadlines (1) Accept any other valid response.	4

Question Number	Indicative content
2d	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. Students **discuss** systems and procedures that the college and students could use to keep data on the network secure, when accessing it using their personal laptops. Procedures to prevent threats to storage data • Acceptable use of IT policies eg network wifi login • Up to date antivirus/ antimalware on college network and laptops • Ban/ encrypt USBs/ portable media • Firewall on the network • Health check for laptops • Regular backups Procedures for preventing unauthorised access to the personal laptops • Firewall installed on the laptops in addition to the network to prevent unauthorised access • Password protection / multi-factor authentication on the laptop, prevents unauthorised access Procedures for preventing unauthorised access to the network via personal laptop • Set up appropriate access levels on network for staff/students • File permissions on network for staff/students • Techniques for preventing other threats to data stored on the laptops being transferred to college network e.g. Anti-virus / malware software installed on laptop • VPN Physical methods to protect data stored on personal laptops • Physical access to laptops. Students must take responsibility for 'looking after' the laptops e.g. locked away overnight, never left anywhere others can access them • Students should use external storage devices with caution, applying the same sort of physical access controls to storage devices e.g. USB drives / external hard drives

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
3a	Requirements: Devices – 5 PCs, file server, backup server, two networked printers Wired connections –PCs/server/backup server/printers Wireless access – laptops / mobile devices Secure internet access Annotations – types of connections and devices Note: Do not penalise for not having a separate printer server or a communication server.

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 up to **two** marks for each of **two** linked explanations, such as: • Signal is constant/reliable/stable (1) not affected by interference/walls/other devices (1) • Signal does not deteriorate over distance (as much) (1) reduce the need for boosters (1) • More secure (1) because it is not as easily intercepted/ no need to set up encryption/WPA/WEP etc (1) • Restrict movement / no mobility / cables have to be laid (1) PC must stay where the connection point is (1) • Wired connections are **faster** (transmission speeds) than wireless connections (1) allowing large files to download **faster** (1) • Health & Safety risks (1) trailing cables / tripping hazards etc (1) Do not award for cost. Accept any other valid response.	4

Question Number	Answer	Mark
3c	Award up to **three** marks for each of **two** descriptions: **Networking (1)** Manages communication (protocols) within the network and externally (1) to govern and control data transmission (1) as well as managing and maintaining the network using utility programmes (1) **Memory management (1)** Allocates space/memory to files/programs/clipboard items that are running/open (1) decides how much each process will get process will get memory and at what time (1) monitors each memory locations status i.e. free/allocated (1) **Multi-tasking (1)** Allocates each task a slice of processor time (1) keeps a track of where the user is in each task (1) and goes from one to the other without losing information (1) **Device drivers (1)** Driver receives signals from/ communicates with hardware (1) translates signals so software (OS & applications) can understand (1) when a signal is received from hardware OS it is held by a buffer / instruction put into a queue until resources available (1)	6

Question Number	Indicative content
3d	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 implications for the company of using cloud storage for backup rather than a local server. **Cloud based backup** - Stored / managed by third party - Stored offsite - cost must be weighed up - pay only for what is used – if need increased storage, can pay for extra. - environmental issues - must ensure have security protocols in place which comply with the GDPR - giving a third party access to secure data introduces extra risk - there may be security concerns with using online services, as these are often targeted by hackers because of their 'high profile' nature - backup performance is dependent on the quality and availability of an internet connection - can be set up to automatically back up / sync with mobile devices, ensuring that latest information is available to those that need it. This also improves security – if any device lost/stolen data will be available on server - likely to have more robust disaster recovery in place - access remotely - Large storage capacity **Onsite server** - company has complete control, in particular control over security of data - cost to be weighed up – cost of server / may need to employ IT staff to run the system - if extra capacity is needed will need to purchase additional server - no reliance on internet connection - cannot be accessed remotely / cannot auto sync with mobile devices unless additional systems put in place e.g. VPN - offsite storage of backups should be considered - natural disasters, e.g. fire / flood

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 **discuss** how technology has impacted on the ability of employees to work from home. Access to systems and data: - Networking – users can access company networks using VPNs and remote desktop applications. Gives Financial Advisors access to all of the files they will need/would have if working in the office. Also ensures data security - If the company use cloud storage will also give access to files and ensure synchronisation of files so that everyone in the organisation is working of the same files. Users will not need to worry about backing up files. - Cloud computing can be used so that everyone is working on the same software versions, reducing compatibility issues. Home workers don't have to worry about buying / installing up-to-date software on PCs/ laptops - May be able to take advantage of remote desktop technologies which will provide a similar experience to working in the office Communication: - A range of online communities /VoiP / video conferencing can be used / set up to ensure that the Financial Advisors don't feel isolated / maintain communication - Data transmission broadband / cellular widespread with increasingly good/reliable/stable connections. - Financial advisers will be able to communicate with clients over secure cellular networks Data security: - Security is a major issue as Financial Advisors will be dealing with highly sensitive client data. Security is enhanced by using secure internet connections. - Encryption can be used to secure data during transmission. - Threats to data stored on systems can be reduced by using sophisticated anti-virus, firewalls, encryption - Access levels to protect sensitive data

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 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	5–7	• 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	8-10	• 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
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 **evaluate** the advantages and disadvantages of updating all its IT systems. Cost / benefit • GBA will incur large initial costs for IT systems • May have to employ extra IT staff, initially and/or long term • Cost of staff training • May be able to re-coup some finance from selling on used equipment Disposal of old equipment • May need to bring in experts (which will be costly) to ensure all data is removed or storage media destroyed • Time and cost to dispose of the hardware in an environmentally friendly way Implementation • Direct change over could impact the operations of GBA if the new systems doesn't work and the current system is obsolete • Phased current staff could get used to the new system in phases • Parallel, downtime would be held to a minimum with the current systems still running while the new ones are being implemented Integration • Other systems in use by staff e.g. portable devices need to be checked to ensure compatibility with the new office system • Files could be lost/ corrupted during transfer Productivity • Loss of productivity during implementation • Improve productivity / efficiency with updated systems Working practices • Changes to IT systems might have an impact on employees working from home eg updating mobile technology Staff training needs (initial & ongoing) / User support • How can GBA minimise the effects on staff • Cost • Timing • In house or outsourced? Testing • Must ensure that new system will work on all platforms • Will need to test this prior to move as far as possible • Need to ensure new systems will work with/be suitable for current IT needs

		Security
		• Data during changeover • Setting up new systems • Up-to-date security software

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 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 evaluation which contains generic or descriptive points • Little or no conclusion
Level 2	5–8	• 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 evaluation which considers some different competing points • There may be a conclusion which is partially supported
Level 3	9-12	• Demonstrates mostly accurate and detailed knowledge and understanding • There may 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 evaluation which clearly considers different aspects and competing points in detail • There is a conclusion that is supported