Cambridge Technicals

IT

Level 3 Cambridge Technicals Certificates in IT **05838, 05839**

Level 3 Cambridge Technicals Diplomas in IT **05840, 05841, 05842, 05877**

OCR Report to Centres January 2018

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OCR REPORT TO CENTRES

Unit 1 Fundamentals of IT

General Comments:

This was the third sitting of this examination. It was pleasing to again see an increase in knowledge for some candidates. Responses for some candidates though still appeared to be little more than general knowledge, often not demonstrating the depth of understanding required after studying this unit. It is essential that candidates have a sound understanding of the content of Fundamentals of IT, as this knowledge will provide the foundation needed to study the optional units.

When preparing candidates for this unit, centres should use a wide variety of resources. No single resource will contain all the necessary learning to allow candidates to access the highest grades for this unit. Resources endorsed by OCR contain an introduction to some topics included in the specification. Additional materials and research will be needed to fully prepare candidates for this unit's summative assessment.

Examination Technique

For the multiple choice questions, most candidates attempted each question. A small number of candidates still did not provide an answer for each question. Good examination technique would suggest that each question is attempted. Candidates could discount clearly incorrect answers to allow them a more informed choice for the remaining options.

Candidates should be reminded that section B features a brief context. The context should be used in answering the question to allow full marks to be achieved.

Comments on Individual Questions:

Question No.

1.   Answer: B. The purpose of a processor is to manage the main functions and operations of the computer.
2.   Answer: A. Quantum computer systems do not rely on binary logic.
3.   Answer: A. When setting up a microwave network, all devices must be in line of sight.
4.   Answer: C. There are four bits in a nibble
5.   Answer: C. A disadvantage of using Open Source software is that there may be an increased security risk as the source code can be edited by others.
6.   Answer: D. An advantage of a multiprocessor operating system is that the throughput of data is usually greater than a single processor system.
7.   Due to recent advances in technology there are now personal assistant products on the market that can be personalised to different voices. This means the question in its current form is invalid. A decision was taken to award one mark to every candidate, regardless of their response to this question to ensure no candidate was disadvantaged.
8.   Answer: D. Insufficient RAM capacity is the most likely cause of a slow running application on a computer.
9.   Answer: C. A Packet retransmission is not provided by the UDP protocol.
10.   Answer: C. Locking server room doors is a physical method of improving security of information.
11.   Answer: D. This is not using social engineering to gain access to information.
12.   Answer: A. An advantage of using RFID technology is that packages do not need to be in line of sight of the reader to be identified.

13. Answer: C. Privacy screens are used to protect data and information from being seen by unauthorised viewers.
14. Answer: B. Overwriting old data protects it from being accessed by replacing each bit on the hard disk with fresh data.
15. Answer: A. A firewall does not prevent an authorised user from using the system maliciously.

Section B

16a. Candidates were asked to describe the purpose of a solid state drive and a graphics card. Many candidates were able to successfully describe the purpose of a solid state drive, although a number of candidates described characteristics, rather than explaining the purpose. For example, candidates stated that solid state drives were 'faster' than a hard drive. Fewer candidates were able to describe the purpose of a graphics card, with many believing it was removable storage such as a USB flash drive.

16b. This question asked candidates to explain two reasons why Progress Jewellers would use a LAN. Many candidates gave generic answers, or answers relating to the use of a LAN in a school. Centres are reminded to ensure candidate use the supplied context to answer questions in this section.

16c. Most candidates were able to correctly identify a biometric method that Progress Jewellers could use to control access to the POS terminals.

16d. This question asked candidates to explain two advantages and one disadvantage of using biometric methods to control access to the POS terminals. Poor examination technique meant that many candidates did not read the stem of the question which stated that the biometric method was used alongside a username and password. Many candidates gave answers about improved log-on speeds as the biometric would replace the username and password. This was clearly an incorrect response. Frequently seen correct advantages explained how security was improved as even if the user's username and password was compromised, an attacker would still be unable to gain access due to the biometric being also needed.

Poor examination technique again meant that some candidates were unable to explain a correct disadvantage. Progress Jewellers already use the technology, so answers relating to the cost of purchasing biometric readers was not considered worthy of credit as it was not correct in the given context.

17a. This question asked candidates to explain two advantages and one disadvantage of using email to obtain IT support. Many candidates were able to explain suitable advantages, such as the ability to send screen shots to clearly explain the problem. Poor examination technique meant that some candidates did not provide answers in context and were comparing the use of email with sending a letter to the IT team which were not considered worthy of credit.

17b. Few candidates appeared to have studied this part of the specification and provided answers that appeared to be more general knowledge that those based on study of the specification.

17c. Many candidates did not appear to know what industry certification was. Some candidates explained why staff would be a member of a trade union or a professional body. Those that did know what industry certifications are were able to score well for this question.

17d. Lack of subject knowledge meant that many candidates were able to score well on this question. The specification items that candidates are expected to have studied are dress, presentation and attitude.

18. This question was marked using a banded response mark scheme. Candidates were asked to explain why Progress Jewellers would use both a file server and a mail server. Many candidates could explain why the individual servers would be used that allowed marks in MB2 to be awarded. Few were able to clearly explain why Progress Jewellers would use both server types which was required to move to MB3.

19a. This question asked candidates to identify and describe two pieces of hardware needed to create a WAN connection. Lack of subject knowledge meant that many candidates gave hardware that would be used to create a LAN rather than a WAN. Answers such as switch, hub, cable were not considered worthy of credit. Correct answers included a router and a modem. Candidates that could identify these items were frequently able to describe the device.

19b. This question asked candidates to identify and describe one threat, other than social engineering, to Progress Jewellers data when transmitting over a WAN. Poor examination technique meant that some candidates gave social engineering as an answer! Many candidates gave a correct answer to this question, often describing the interception of Progress Jewellers data.

20. This question was marked using a banded response mark scheme. Candidates were asked to explain why Progress Jewellers would use bespoke software to manage its business. Many candidates were able to answer this question well, frequently scoring in MB2. Some candidates explained why Progress Jewellers would not use open source software, or described advantages of open source software rather than bespoke.

21ai. This question asked candidates to identify virtualisation technology. Many were able to do so.

21aii. This question asked candidates to explain two advantages and one disadvantage of virtualisation technology. Many candidates had clearly studied this topic well and were able to explain advantages and disadvantages in context. The most frequently seen incorrect answer related to mainframes or thin client technology rather than virtualisation.

Unit 2 Global information

General Comments:

It was pleasing to note that the overall performance of the candidates had improved from the Summer 2017 series. However, it was also noted that many candidates still demonstrated knowledge gaps in relation to the unit content. Centres should ensure that candidates are familiar with all areas of the unit content prior to being entered for the external examination.

The correlation between content, context and command word also appeared to be limited. Candidates should be aware of the differing command words, e.g. identify, describe, explain, discuss and the demands of each of these. Candidates should also be familiar with the concept that questions may have a specific focus. It is this focus which should be considered by candidates when composing their responses to questions.

In this unit, a pre-release case study is issued. This provides the context for Section A of the external examination. Many candidates appeared to be unfamiliar with the context of the case study. For this external examination this was Progress DogTravel. This apparent lack of familiarity limited candidate's accessibility to many of the questions in Section A of the external examination where the questions are directly linked to this case study.

The case study also includes some research prompts for candidates. These prompts should not be ignored as the knowledge gained through completing the research will enhance accessibility to the questions in Section A.

Section B of the external examination does not require candidates to link their responses to the case study. It was, however, noted that there was evidence of knowledge gaps from the candidates' responses in this section.

There are many resources available which can be used during the teaching of this unit. Centres are encouraged to access the resources available from the OCR website that relate to the interpretation of the case study and exemplification/analysis of candidate responses from the Summer 2017 series.

Comments on Individual Questions:

Section A

This section of the external examination was directly linked to the case study, Progress DogTravel.

Q1   The focus of this question was on the information styles used within the dog travel arrangements database used in Progress DogTravel. An excerpt from this database had been provided in the case study. The question linked to bullet point 2 in the research points in the case study.

Part a of the question required candidates to identify a field in the database which is of the text information style. Most candidates were able to correctly identify a correct field - dog name, airline or destination.

Part b (i) of the question required candidates to identify the information style used for the Dogs Rabies field of the database. Most candidates were able to correctly identify this as being of the numerical/number data type. Part (ii) of this question then required candidates to explain why this information style had been used. Many candidates were able to provide some detail about this choice of information style but the explanations were, on the whole, limited to the fact that the information held in this field was based on a number (being the number of days) which has to be a whole number. Few candidates were able to then provide further explanations, such as this field is a calculated field using the data of the rabies injection and the date of the flight.

Q2 The focus of this multi-part question was on the information held in the Dog Travel arrangements database, This question linked to bullet points 2 and 3 of the research points.

Part (a) of the question required candidates to identify the information data type that the date of the rabies injection was included in. Many candidates failed to provide a correct answer to this part of the question. Acceptable information data types included secondary or quantitative. The date the rabies injection was given to the dog would have been provided by the vet who provided the injection. As the vet is an external source to Progress DogTravel the most appropriate response was secondary. Quantitative was an acceptable response as the data was a date.

The response provided for part (b) of the question demonstrated a knowledge gap relating to the different categories of information. Acceptable responses included communication or planning.

The focus of part (c) of the question was on the importance of the travel paperwork containing good quality information. Response were accepted where candidates provided descriptions of what could happen if the paperwork was not of good quality. Many candidates were able to provide brief responses to this part of the question that related to the different requirements of different countries, so paperwork had to include all relevant and required information and the fact that the dog may be refused entry to a country if some of the required information was missing from the paperwork.

Part (d) of the question focused on the consequences of poor quality information being contained in the travel paperwork. Many candidates were able to provide acceptable response to this question. However, it was evident that some candidates had failed to read the question correctly. These candidates provided responses relating to Progress DogTravel rather than consequences to the dog and its owner.

Q3 This question was marked using a banded response method. Candidates were awarded marks based on the level of detail included in their response and the application of their response to Progress DogTravel. The question also incorporated the quality of the response in terms of correct use of technical terms and the coherent use of logical reasoning. This is denoted by the use of a * next to the question number with candidates being informed of this in the rubric on the front of the examination paper.

This question linked to bullet point 4 in the research points in the case study. It was apparent that many candidates had used previous exam papers as practice but, if this strategy is used, candidates should be aware that the focus of any question will change series on series. In addition, candidates should be reminded that any question in Section A must be answered using the case study and that their knowledge must be applied to this scenario.

The focus of the question was on the impact of the Data Protection Act (DPA). No credit was gained by candidates simply providing the eight principles of the DAP but these could be used to further explain the impact of the Act when data is being handled.

Many candidates were able to provide one impact with the most popular being that of security. This strategy enabled candidates to be awarded a mark in the middle mark band. There appeared to be a lack of understanding about the impact of handling data in relation to the DPA and relating these to the case study. Where candidates failed to provide relevant examples the accessibility of the higher marks within the middle mark band was negated.

To reach the highest mark band, candidates needed to provide a detailed discussion of more than one impact. These impacts needed to be applied to Progress DogTravel with relevant and complete examples provided.

Q4   The focus of this question was on a method that could be used to maintain the confidentiality of information uploaded to an online storage area. Candidates needed to identify a suitable method, justifying their choice. This question linked to part of bullet point 5 in the research points in the case study.

if candidates failed to identify a suitable method then they were unable to access the marks allocated for the justification.

Many candidates provided an acceptable method and so were able to access the justification marks. Acceptable methods included passwords and encryption. Many candidates failed to justify their choice of method with many responses simply describing the method.

Q5   This question was marked using a banded response method. Candidates were awarded marks based on the level of detail included in their response and the application of their response to Progress DogTravel. The question also incorporated the quality of the response in terms of correct use of technical terms and the coherent use of logical reasoning. This is denoted by the use of a * next to the question number with candidates being informed of this in the rubric on the front of the examination paper. This question linked to part of bullet point 1 in the research points in the case study.

The focus of this question was on the issues which could arise with the paperwork being stored in an online storage area for those dogs travelling to a remote location.

To be awarded a mark in the middle mark band candidates needed to provide an explanation of at least one issue that could arise. Examples also needed to be provided which related to the case study, Progress DogTravel.

Many candidates were able to provide a brief explanation of at least one issue that could arise. The most common issue was that of internet access and how this could be intermittent or not available in the remotest parts of the world. However, many candidates were unable to provide further details as to how this would impact on Progress DogTravel.

The level of detail provided was the main discriminator between the middle and top mark band. To be considered for a mark in the highest mark band candidates needed to have considered more than one issue with a detailed explanation.

In addition to these requirements for the highest mark band candidates needed to provide relevant and specific examples relating to Progress DogTravel. For example, candidates who had considered the destination of dog, were able to provide examples relating to the intermittent and patchy internet access that can affect a remote country and how these can lead to it being difficult to ascertain the validity of the information held in the travel paperwork.

Section B

Candidates did not need to apply their responses to Progress DogTravel in this section of the external examination.

Q6 The focus of this question was on a library removing data from a database and the implication of this process not being carried out safely.

Part (a) of the question required candidates to identify the data analysis tool that could be used to locate and remove data for a given scenario. If candidates failed to provide a correct data analysis tool, they were unable to access the marks allocated for the justification. Some candidates were able to identify an appropriate data analysis tool that could be used to carry out this process – data cleansing/data tables. Again, candidates were unable to justify their choice of data analysis tool in the context of the question and so were unable to access all the allocated marks. However, it was evident that many candidates had a knowledge gap relating to the different types of data analysis tools.

Part (b) of this question required candidates to describe one disadvantage to the borrowers of the library if the data is not removed safely from the database. Many candidates were able to access the marks allocated for this part of the question by providing a description that related to how hackers/fraudsters could access the information and how this could lead to identity theft.

Q7 The focus of this question was on the securing of data and information held by an organisation. Part (a) of the question related to the impacts on an organisation of keeping data and information secure. Most candidates were able to provide explanations of two impacts that could be the result of keeping data and information secure. Acceptable responses included an increase in customer base as the organisation is perceived to be trustworthy and there may be an increase in costs as security software/hardware and the maintenance of these can be expensive.

Part (b) of the question required candidates to identify and describe two methods that could be used to intentionally destroy data and information. Many candidates were able to gain high marks for this part of the question. Acceptable responses included burning/ shredding of paper-based documents and electromagnetically wiping storage devices.

Part (c) of this question required candidates to describe how encrypting data at rest could maintain its security. Many candidates were able to access one mark for describing how the data would be unreadable by anyone who did not have the encryption key. However, they failed to access the other allocated mark as they focussed their response on the data being in transit.

Part (d) of the question required candidates to explain what is meant by 'partially anonymised' with them then having to partially anonymise a given set of data. Many candidates were able to access one mark for the explanation of the term by providing a response relating to the fact that part of the data is hidden/changed into something else.

The further allocated mark was awarded for the candidates defining what could be used when this process is taking place. Most candidates were able to correct partially anonymise the given data set, accessing the one allocated mark. However, many candidates provided an answer that simply reworded the question. This strategy limited the accessibility to the allocated marks.

Q8   This question required candidates to compare the use of braille text and tactile images. Many candidates were able to provide at least one correct point about both braille text and tactile images, so being awarded two marks. To achieve two marks a correct point about both styles needed to have been made. If points had just been made about either braille text or tactile images, then a maximum of one mark could be awarded. To be awarded the full allocated marks for this question, two complete comparisons needed to be made.

Many candidates, however, provided vague answers that related to the user having limited vision or that tactile images were used by the NASA Hubble Space Telescope but failed to apply this to its use.

Q9   This question required candidates to identify an Act from a given context and describe actions that need to take place when a rights of access request is made.

Many candidates failed to identify the correct Act, part (a), with many providing Freedom of Information as their response. The correct Act was the DPA, in that the information being requested is the information held about a person. Many candidates demonstrated a knowledge gap relating to the actions that should be taken when a right of access request is made. Actions that need to be taken include the verification of the identity of the person making the request and that the request has to be made in writing detailing what information is required.

Q10 Candidates were required to identify two ways a secured online area could be used by employees who work remotely and then going on to explain two benefits of the use of this for communication.

Most candidates were able to provide at least one way this online area could be used, part (a) of the question. Acceptable responses included emails, document sharing and project planning. Many candidates provided answers that related to social media so demonstrating a knowledge gap about this part of the unit specification.

The response provided for part (b) of the question demonstrated a knowledge gap with many candidates providing responses relating to the fact that the area can help people work at home. This was given in the stem of the question and so gained none of the allocated marks. Acceptable benefits of using this type of area for communication include that the area can be used to share documents which can be stored securely and can be used during web or video conferences or that secure face-to-face conversations can be scheduled which can help communication as its more beneficial to speak about an issue rather than having to explain things in words.

Unit 3 Cyber security

General Comments:

Candidates seemed far better prepared both in terms of content and exam technique. The quality of answers were stronger and this was most marked in those answers requiring an extended answer. Candidates were also less likely to simply restate the question when answering or simply not attempting the question.

All of these factors contributed to a performance by the cohort that produced some excellent scripts with a good range of skills and understanding shown.

Comments on Individual Questions:

Section A was based on the case study and associated tasks

Question 1

This question was answered extremely well across the cohort as a whole, with the vast majority achieving full marks.

Question 2

For question 2a, candidates did not need to focus solely on an e-safety implication of an out-of-date system and, indeed, candidates did identify the servers themselves would not be working as well as they should or were likely to be incompatible with other features of modern computing systems. Other answers obviously focussed on the cyber impact, but overall, question 2a was well answered.

Question 2b brought some interesting answers, but the majority of candidates were able to identify at least one example of both physical and hardware controls.

For question 2c, candidates had to identify operational security measures. A good proportion of candidates correctly described operational security measures but others missed the focus of the question and gave general measures that were not considered to be operational.

Question 2d asked candidates to discuss the use of monitoring of employees as a method whereby the likelihood of hacking could be reduced. As mentioned above, the quality of writing displayed in answer to this question was far superior to that seen in previous series. However, even with a range of different methods of monitoring accepted by markers, some candidates managed to write answers that were either wrong in their interpretation or so lacking in focus on monitoring as to make marks difficult to allocate. That having been said, this question was generally well answered.

Question 3

For question 3a, markers relaxed their interpretation of a 'hack' and instead focussed on whether the attack could take a website off line. The majority of candidates correctly identified and described a DNS attack, whilst the second most frequent answer was a DDNS attack. Where the description of the DDNS attack was not a repeat of the DNS description, but focussed on the distributed nature of the attack, full marks were awarded.

Across the cohort, this part of the question was well answered. However, question 3b proved more of a challenge. Some candidates stated that 'significant' was an indication of how important the attack was and so were really simply repeating the question, whilst others attempted to give examples. Where candidates talked about impact on data, or an impact on the ability of the business to function, marks were awarded.

For question 3c, many candidates were fully aware of what a cyber-security incident report was and were able to describe the impact on future incidents. However, whilst a large proportion of candidates wrote answers that were of MB2 standard, few gave really flowing answers that showed a full understanding. This is suggested as an area on which centres could focus for future series.

Section B assessed knowledge from across the specification and is not linked to the scenario.

Question 4

When candidates are asked to explain an implication, marks are generally awarded as one mark for identifying the implication and the second mark for explaining why it is significant. With this in mind, many candidates were able to identify an implication (such as details may be lost, or the candidate may suffer from identity theft) but few stated why identity theft was of importance. To continue the focus on identity theft, in order to achieve the full marks for this question, candidates had to give some indication of the impact of identity theft – such as having to contact a bank to check on standing orders or other outgoings, or potential impacts on an individual's credit rating.

Very few candidates were able to give a correct answer for question 4b.

For question 4c, many candidates achieved good marks across the question as a whole. The vast majority were aware that a script kiddie was a person with few actual programming skills, but was more of a dabbler who uses other people's scripts and techniques.

Question 5

The problem with question 5a was that whilst virtually all candidates knew what the term 'phishing' meant, they then struggled with the motivation. Where candidates gave generic answers, such as 'for the thrill of it', these were not accepted.

However, many candidates correctly identified attempts to gain access to personal data, or to gain revenge and so full marks were awarded.

For question 5b, where candidates gave answers that were applicable to the choice of password, the vast majority achieved full marks for this question. Some candidates missed the point of the question and discussed measures such as changing a password regularly and so did not achieve full marks.

Question 6

Candidates generally did extremely well at this question with most fully aware of the difference between accidental and intentional threats.

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