

## **Cambridge Technicals**

### **IT**

Unit 3: Cyber security

Level 3 Cambridge Technical Certificate/Diploma in IT  
**05838-05842, 05877**

## **Mark Scheme for January 2017**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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Question		Answer	Marks	Guidance
1	(a)	<p>e.g.</p> <p>Remote administration programme (1st) that is installed on the user's computer (1) so that the computer can be controlled by a third party (1).</p> <p>Writing mobile code/java/javascript/activex code (1st) to track which websites are visited (1) on a smartphone (1).</p> <p>Packet sniffing (1st) that captures packets of data (1) as they are being transferred/in transit (1).</p> <p>Any other valid suggestion.</p>	6	<p>Points marking approach</p> <p>Six marks for two full descriptions. MAX mark three per set of answers.</p> <p>First mark for the correct identification, plus two additional marks for valid description.</p> <p>Methods must relate to hacker and the use of their technical skills.</p> <p>DNA phishing, social engineering, guessing, etc.</p>
	(b)	<p>e.g.</p> <p>Number of standing orders (1).</p> <p>Overdraft limit (1).</p> <p>Date of last cash withdrawal (1).</p> <p>Any other valid suggestion.</p>	2	<p>For two marks</p> <p>The identified data must be of use to access personal data by telephone banking.</p> <p>Scenario states that data will be taken from details of Humphrey's account.</p>

Question		Answer	Marks	Guidance	
	(c)	<p>e.g.</p> <p>The bank will not be able to verify who he is (1) and so he may not be able to access his accounts (1).</p> <p>His home details will be lost (1) and so he will not receive statements/replaced cards, etc (1).</p> <p>Any other suitable implication (1) plus explanation (1).</p>	2	<p>Points marking approach</p> <p>Up to two marks for <b>any suitable implication</b>. First mark for identification of impact, 2<sup>nd</sup> for expansion</p> <p>Data loss i.e. there is no data. Focus of this question is on data loss not data theft</p>	
	(d)	<p>e.g.</p> <p>Individual hacker more likely to be after money (1).</p> <p>So will target lots of individual accounts (1).</p> <p>Government unlikely to be interested in financial details (1).</p> <p>Small scale attack for individual/large scale attack for Government (1).</p> <p>Any other valid suggestion.</p>	3	<p>Points marking approach</p> <p>Up to three marks for a full explanation</p>	
	(e)	i	<p>e.g.</p> <p>The team is more likely to solve the case (1) and so reassure the customer (1).</p> <p>React to attack faster (1) to be more prepared for next attack (1).</p> <p>Any other valid suggestion</p>	2	<p>Points marking approach</p> <p>Two marks for a full explanation</p> <p>Answer must be in context of importance to the customer</p> <p>Accept converse arguments about what happens if stage is not followed</p>

Question		Answer	Marks	Guidance
	(e) ii	<p>e.g.</p> <ul style="list-style-type: none"> <li>• So that every stage is followed/so that the correct people are informed (1) which improves the chances of success (1).</li> <li>• Customers can have confidence that the procedures for dealing with the attack (1) ensure that all aspects of the attack will be fully and correctly investigated (1).</li> <li>• The procedures may be industry/banking standards (1) so all attacks are investigated in the same robust way (1).</li> <li>• Any other valid suggestion.</li> </ul>	2	<p>Points marking approach</p> <p>Two marks for a full explanation</p> <p>Answer must be in context of importance to the customer</p> <p>Accept converse arguments about what happens if stage is not followed</p>
	(e) iii	<p>e.g.</p> <p>So that the customer is kept informed (1) and so is less worried/is able to add more information (1).</p> <p>Good customer service (1) as the customer feels that they are part of the process (1).</p> <p>Any other valid suggestion.</p>	2	<p>Points marking approach</p> <p>Two marks for a full explanation</p> <p>Answer must be in context of importance to the customer</p> <p>Accept converse arguments about what happens if stage is not followed</p>

Question			Answer	Marks	Guidance
2	(a)	i	<p>e.g.</p> <ul style="list-style-type: none"> <li>• Access to the data is restricted (1) to those who need access to it/kept away from those who don't need access (1).</li> <li>• Data which is private / confidential (1) is kept private/ confidential (1).</li> <li>• Data which has increased level of security required (1) to be accessed (1).</li> <li>• Any other valid suggestion.</li> </ul>	2	<p>Points marking approach</p> <p>Two marks for a full description</p> <p>'Data is kept private' with no expansion - award one mark only</p>
	(a)	ii	<p>e.g.</p> <p>Humphrey's personal data could be used to answer a security question (1) and so allow the 3<sup>rd</sup> party to pretend to be him (1).</p> <p>The 3<sup>rd</sup> party is able to give private/personal information (1) and so appear to be him (1).</p> <p>Any other valid suggestion.</p>	2	<p>Points marking approach</p> <p>Two marks for an explanation of how data (or a named example of data) could be used to impersonate Humphrey</p>

Question	Answer	Marks	Guidance
(b)	<p>e.g.</p> <ul style="list-style-type: none"> <li>• If the data is accessed (1) by a 3rd party/hacker (1) then the data is useless to them (1).</li> <li>• An algorithm is used to scramble the information/the plain text (1).</li> <li>• A code is applied to the data (1).</li> <li>• Encrypted message / data can only be read if de-encrypted (1).</li> <li>• Only holders of the encryption key are able to read the message (1)</li> <li>• Any other valid suggestion.</li> </ul>	3	<p>Points marking approach</p> <p>Up to three marks for a full explanation. Read whole answer and mark to candidate's best advantage</p>
(c)	<p>e.g.</p> <p>Contact the mortgage company by phone/fresh email (1) to check that the email has been sent (1).</p> <p>Check for spelling errors (1) as phishing emails often have inaccuracies (1).</p> <p>Look for personalisation within the email (1) as phishing emails are often very general (1).</p> <p>Check that email is from correct the web address/domain name of the mortgage company (1) as phishing emails use similar seeming false addresses (1).</p> <p>Any other valid suggestion.</p>	4	<p>Points marking approach</p> <p>Four marks for two full explanations. MAX mark two per set of answers</p> <p>First mark for the correct identification, plus one additional mark for valid explanation</p>

Question		Answer	Marks	Guidance				
3	*	<p><b>Indicative Content</b></p> <p>Security may be compromised by allowing access directly from Social Media sites.</p> <p>Social media sites are outside of the direct control of the Dependable Bank and so may not be as reliable.</p> <p>Social media sites may have lower levels of security and so may offer an easier method of access to data.</p> <p>Data could be stolen and used for identity theft, with follow on consequences.</p> <p>Funds could be transferred from the customer's account.</p>	10	<p>Levels of response marking approach</p> <table border="1"> <tr> <td>7 – 10 marks</td> <td> <p>Candidate has shown a detailed level of understanding by discussing more than one implication for customers if this facility was introduced.</p> <p>Relevant examples will be used to support discussion and ideas will be expressed clearly and fluently.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> </td> </tr> <tr> <td>4 – 6 marks</td> <td> <p>Candidate has shown a good level of understanding by explaining at least one implication for customers if this facility was introduced.</p> <p>Some example (s) will be used to support explanations which may not be relevant and may at times detract from the fluency of the narrative.</p> <p>At the bottom of the mark band the candidate may have described a single implication.</p> </td> </tr> </table>	7 – 10 marks	<p>Candidate has shown a detailed level of understanding by discussing more than one implication for customers if this facility was introduced.</p> <p>Relevant examples will be used to support discussion and ideas will be expressed clearly and fluently.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p>	4 – 6 marks	<p>Candidate has shown a good level of understanding by explaining at least one implication for customers if this facility was introduced.</p> <p>Some example (s) will be used to support explanations which may not be relevant and may at times detract from the fluency of the narrative.</p> <p>At the bottom of the mark band the candidate may have described a single implication.</p>
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<b>Section B</b>							
4	<p>e.g.</p> <p>Physical (1st) an intruder alarm could be placed in the room (1) where the servers are held (1).</p> <p>Firewall (1st) monitors network traffic (1) and controls the flow of data out of the system (1).</p> <p>Biometric (1<sup>st</sup>)...</p> <p>Any other valid suggestion.</p>	3	<p>Points marking approach</p> <p>Up to three marks</p> <p>First mark is for identification of a method of Access Control. Second and third marks are for the description of the Access Control method. If candidate does not identify a form of access control, no marks are to be awarded.</p> <p>DO NOT award marks for encryption</p>				
5	<p><b>(a)</b></p> <p><b>Indicative Content</b></p> <p>IPS uses real-time tracking and responds to identified attacks to block access to IP addresses</p> <p>Records are kept (audit logs, etc.) so that lessons may be learnt from previous attempts</p> <p>Student records are likely to be a low priority target for attack.</p> <p>Most attempts to gain access to data are likely to be by phone-call or other direct contact and so the use of audit trails and incident logs to create pro-forma responses allows staff to follow procedures, based on previous incidents.</p>	7	<p>Levels of response marking approach.</p> <table border="1"> <tr> <td>5 – 7 marks</td> <td> <p>Candidate has justified the use of IPS to protect pupil data.</p> <p>Justification is based on clear reasoning supported by points explained in the argument, which are in turn supported by examples.</p> <p>Ideas will be expressed clearly and fluently.</p> </td> </tr> <tr> <td>3 – 4 marks</td> <td> <p>Candidate has shown a good level of understanding of the use of IPS and has explained this in the context of the protection of pupil data.</p> </td> </tr> </table>	5 – 7 marks	<p>Candidate has justified the use of IPS to protect pupil data.</p> <p>Justification is based on clear reasoning supported by points explained in the argument, which are in turn supported by examples.</p> <p>Ideas will be expressed clearly and fluently.</p>	3 – 4 marks	<p>Candidate has shown a good level of understanding of the use of IPS and has explained this in the context of the protection of pupil data.</p>
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					<p>The supporting argument may be lacking the use of examples, or where examples have been used, these are not used strongly, or the supporting argument may be poorly developed and lacking in detail.</p>
				1 – 2 marks	<p>Candidate has identified some points relevant to the use of IPS to protect pupil data. There may be some doubt that the candidate fully understands the term IPS.</p> <p>There may be examples, but these are not used as part of a coherent answer.</p>
				0 marks	Nothing worthy of credit.

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5	(b)	<p>e.g.</p> <p>Protection is the process of stopping an event happening (1)</p> <p>IPS monitor systems and react to them (1).</p> <p>Therefore, IPS systems react after the event (1).</p> <p>Delay in reaction can be very slight (1).</p> <p>Once IP address/ port/threat identified all traffic blocked from there (1).</p> <p>Conclusion based on points made (1).</p> <p>Use of suitable example (1).</p> <p>Any other valid suggestion.</p>	6	<p>Up to six marks. If no conclusion, MAX five.</p> <p>Read whole answer and mark to candidate's best advantage.</p> <p>The answer as a whole should be read and conclusion awarded if it is based on the points made.</p> <p>1 mark may be awarded for an overall statement of the validity of the statement, even if not supported by arguments.</p>

Question	Answer	Marks	Guidance										
6	<table border="1"> <tr> <td><b>Marks</b></td> <td>Marking Protocol</td> </tr> <tr> <td><b>4 marks</b></td> <td>Two complete comparisons</td> </tr> <tr> <td><b>3 marks</b></td> <td>One complete comparison and one individual point</td> </tr> <tr> <td><b>2 marks</b></td> <td>One complete comparison</td> </tr> <tr> <td><b>1 mark</b></td> <td>One individual point about either side</td> </tr> </table> <ul style="list-style-type: none"> <li>• Scammers send an email with a false link (1) a phisher directs the victim to a false website (1).</li> <li>• Phishers tend to target many people at the same time (1) whilst a scammer tends to target on an individual basis (1).</li> <li>• A scammer is cyber-enabled (1) whilst a phisher is cyber-dependant (1).</li> <li>• Scammers defraud their target/example provided (1) whilst phishers attempt to get personal details example provided which they then use (1).</li> <li>• Scammers &amp; phishers pretend to be something/ someone/an organisation which they are not (1).</li> <li>• Any other valid suggestion.</li> </ul>	<b>Marks</b>	Marking Protocol	<b>4 marks</b>	Two complete comparisons	<b>3 marks</b>	One complete comparison and one individual point	<b>2 marks</b>	One complete comparison	<b>1 mark</b>	One individual point about either side	4	<p>To be awarded comparisons the difference between a scammer and phisher must be clearly defined.</p> <p>If a clear comparison is provided, then two marks may be awarded. The comparisons may not be consecutive in the answer.</p>
<b>Marks</b>	Marking Protocol												
<b>4 marks</b>	Two complete comparisons												
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**OCR (Oxford Cambridge and RSA Examinations)**  
1 Hills Road  
Cambridge  
CB1 2EU

**OCR Customer Contact Centre**

**Education and Learning**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

[www.ocr.org.uk](http://www.ocr.org.uk)

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**OCR (Oxford Cambridge and RSA Examinations)**  
Head office  
Telephone: 01223 552552  
Facsimile: 01223 552553

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