



# **Cambridge Technicals**

## **IT**

Unit 1: Fundamentals of IT

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.

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## SECTION A

Question		Answer	Marks	Guidance
1	(d)	Converts digital signals into analogue signals.	[1]	
2	(d)	Increases energy consumption by RagNar Technologies.	[1]	
3	(c)	Fibre Optic signals cannot be affected by electromagnetic interference.	[1]	
4	(c)	Provides a bridging capacity between wireless and wired networks.	[1]	
5	(a)	1011 1011	[1]	
6	(a)	119	[1]	
7	(a)	A virtual storage system can be easier to back up than a traditional storage system.	[1]	
8	(b)	Supports direct cable connections between two network interface cards.	[1]	
9	(a)	Approval of the finance terms for an order.	[1]	
10	(c)	Leaving security settings at default public level.	[1]	
11	(c)	Advice on how to maintain fitness levels.	[1]	
12	(d)	A self-replicating file that installed without the consent of the computer owner.	[1]	
13	(b)	A host machine and a guest machine.	[1]	
14	(c)	So that the payslip may not be read if intercepted.	[1]	
15	(d)	The Waste Electrical and Electronic Equipment Regulations (2013).	[1]	

Question	Answer / Indicative Content	Mark	Guidance
16	<p>Up to <b>two</b> marks for each of <b>two</b> explanations.</p> <p>e.g.</p> <p><b>Firewall</b></p> <ul style="list-style-type: none"> <li>• Stop unauthorised packets/data (1) from accessing their network (1).</li> <li>• Filter traffic (1) to prevent unauthorised access (1).</li> <li>• Any other valid suggestion.</li> </ul> <p><b>Anti-spyware</b></p> <ul style="list-style-type: none"> <li>• Prevent spyware (1) from being installed on a computer (1).</li> <li>• To detect spyware (1) before it is able to be installed on their devices (1)</li> <li>• Any other valid suggestion.</li> </ul>	<b>[4]</b>	Firewall stops people/hackers (max 1) as the candidate is not showing true technical understanding of what firewall does.
17	<p>Up to <b>two</b> marks for each of <b>three</b> explanations.</p> <p>e.g.</p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• If a fire/flood/other disaster happens in the office (1) data is held elsewhere so no loss of productivity (1).</li> <li>• Easy to work from home/remotely (1) as data is independent of location (1).</li> <li>• (Progress Gaming) can increase their storage capacity (1) without having to wait for equipment to arrive (1)</li> <li>• Reduced hardware costs (1) as physical storage does not need to be purchased (1)</li> </ul>	<b>[6]</b>	Advantages/disadvantages can be from any view point. Do not award the same expansion for different advantages/disadvantage.

Question		Answer / Indicative Content	Mark	Guidance	
		<ul style="list-style-type: none"> <li>Back-ups do not need to be taken (1) as the cloud provider does this for you (1)</li> <li>Any other valid suggestion.</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>If you have not internet connection/slow internet connection (1) you can't do any work as data is no longer on site (1).</li> <li>Data may be accessible by cloud storage company (1) which could be a risk for Progress Gaming (1)</li> <li>Progress Games do not have full control over their data (1) as it is now held by another company(1)</li> <li>Any other valid suggestion.</li> </ul>			
18	(a)*	<p>Indicative content e.g.</p> <ul style="list-style-type: none"> <li><b>Competence with programming environment:</b> so they can program the games. Example so if creating a component of a game when the game is constructed everything 'fits' together</li> <li><b>Ability to write code in relevant language:</b> so that they can develop the games.</li> <li><b>Logical mind:</b> so are able to solve problems. Example – creating a patch for a game if errors have been found</li> <li><b>Well organised:</b> so can keep track of tasks. Example prioritisation of tasks to ensure all tasks are completed in a timely manner</li> <li><b>Good interpersonal skills:</b> so they can work with the rest of the programming team without alienating their colleagues'.</li> </ul>	[10]	7-10	<p>3</p> <p>Has shown a detailed level of understanding by discussing more than one key skills a new programmer should have.</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	<p>2</p> <p>Has shown a good level of understanding by explaining at least one key skill a new programmer should have</p> <p>Some example(s) will be used to support explanations which may not be relevant and may at times detract from fluency of narrative.</p> <p>At the bottom of the mark band the learner may have described a single skill.</p>

Question		Answer / Indicative Content	Mark	Guidance	
					<p><i>There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.</i></p>
			1-3	1	<p>Has identified points relevant to the key skills a new programmer should have</p> <p>Limited use of examples to accompany description and ideas will be poorly expressed.</p> <p>At the bottom of the mark band, a single skill may be identified without an example.</p> <p><i>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.</i></p>
			0		Nothing worthy of credit.
18	(b)	<p>Up to <b>two</b> marks for each of <b>two</b> explanations.</p> <p>e.g.</p> <ul style="list-style-type: none"> <li>• If the teleconference fails/poor phone connection (1) interview can't progress (1).</li> <li>• Cant share/view documents (1) as there is only an audio line (1).</li> <li>• Can't see the programmer (1) so won't pick up on body language/won't know if they are suitably dressed (1).</li> <li>• Don't get to meet the programmer (1) don't know if they will fit in (1).</li> <li>• Cannot confirm identification of interviewee (1) as they cannot be seen (1).</li> <li>• Any other valid suggestion.</li> </ul>	[4]	<p>Two marks for each full explanation.</p> <p>Must be a realistic disadvantage of using a teleconference (<b>voice only</b>)</p>	

Question		Answer / Indicative Content	Mark	Guidance
18	(c)	<p>Up to <b>three</b> marks for description.</p> <p>e.g.</p> <ul style="list-style-type: none"><li>• Progress gaming can be confident (1) that the programmer has a certain degree of experience/ competency (1) that is relevant to the industry (1)</li><li>• Programmer has access to network of resources (1) such as other experts (1) to help with technical issues (1)</li><li>• Continuing professional development (1) which is accredited by the professional body (1) to ensure skills are up to date (1).</li><li>• Any other valid suggestion.</li></ul>	[3]	

Question		Answer / Indicative Content	Mark	Guidance		
19		<p>Indicative content:</p> <p>Advantages/disadvantages of a change management process at Progress Games.</p> <p>e.g.</p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Reduces the likelihood of things going wrong during development.</li> <li>• Creates a clear log of changes/improvements made.</li> <li>• Allows changes to be approved.</li> <li>• Formalises a process/sets clear rules for changes.</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• Can introduce complexity in programming practice.</li> <li>• Can reduce responsiveness of developers if all things have to go through process.</li> <li>• Can be difficult to implement successfully.</li> <li>• Needs everyone to follow the process.</li> </ul> <p>Any other valid suggestion.</p>	[7]	5-7	3	<p>The learner has evaluated the use of a change management process at Progress Games. Both advantage(s) <b>and</b> disadvantage(s) have been analysed and learner is able to make informed and appropriate judgements within the context provided. An implied conclusion is present which is informed by the supporting analysis.</p> <p>Subject specific terminology and knowledge will be clearly used to support and inform the <i>explanations/evaluations</i>.</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>
				3-4	2	<p>The learner has described reasons for or against the use of a change management process at Progress Games. Advantage(s) <b>and/or</b> disadvantage(s) have been described and learner is able to make some judgements within the context provided.</p> <p>Some subject specific terminology and knowledge will be used.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is for the most part relevant and supported by some evidence.</i></p>
				1-2	1	<p>The learner has identified points about the use of a change management process at Progress Games.</p> <p>At the bottom of the mark band, the learner may have simply provided a single point.</p> <p>Subject specific terminology may be limited or missing.</p>

Question			Answer / Indicative Content	Mark	Guidance												
					<table border="1"> <tr> <td></td> <td><i>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.</i></td> </tr> <tr> <td>0</td> <td>Nothing worthy of credit.</td> </tr> </table>		<i>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.</i>	0	Nothing worthy of credit.								
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0	Nothing worthy of credit.																
20			<p>For <b>six</b> marks:</p> <table border="1"> <tr> <td>A (1).</td> <td>A (1).</td> </tr> <tr> <td>D (1).</td> <td>B (1).</td> </tr> <tr> <td>B (1).</td> <td>D (1).</td> </tr> <tr> <td>H (1).</td> <td>H (1).</td> </tr> <tr> <td>F (1).</td> <td>F (1).</td> </tr> <tr> <td>G (1).</td> <td>G (1).</td> </tr> </table>	A (1).	A (1).	D (1).	B (1).	B (1).	D (1).	H (1).	H (1).	F (1).	F (1).	G (1).	G (1).	[6]	These are the only two possibilities
A (1).	A (1).																
D (1).	B (1).																
B (1).	D (1).																
H (1).	H (1).																
F (1).	F (1).																
G (1).	G (1).																

Question		Answer / Indicative Content	Mark	Guidance	
21	(a)	Comparison of an off the shelf operating system with an open source operating system.	[4]	<p><i>If the point is the same / different for both then the candidate must explain why it is for both to gain marks for both.</i></p> <p>Do not accept open source is free.</p> <p>The use of "isn't " within the answer does not create a comparison.</p> <p>The use of "whereas" within the answer does however allow create a comparison.</p>	
		4			<b>Two complete</b> comparisons
		3			<b>One complete</b> comparison and <b>one individual</b> point
		2			<b>One complete</b> comparison
		1			<b>One individual</b> points about either side
		0			Nothing worthy of credit
		e.g.			<ul style="list-style-type: none"> <li>• Purchase price of off the shelf system is usually more expensive to purchase than open source whereas open source purchase cost is often small</li> <li>• On-going support for off the shelf comes from manufacturer. Open source often relies on support from internet/developer/enthusiasts.</li> <li>• Off the shelf operating systems mean staff will usually be more familiar with it, open source product staff may not have seen before.</li> <li>• open source operating systems can have its source code edited whilst off the shelf operating systems are maintained by the manufacturer.</li> <li>• Any other valid suggestion.</li> </ul>

Question		Answer / Indicative Content	Mark	Guidance
	(b)	<p><b>One</b> mark for identifying alternative type of operating system and up to <b>three</b> marks for explanation.</p> <ul style="list-style-type: none"> <li>• <u>Bespoke/Custom</u> (1st) would be custom designed for Progress Games (1) and would only have the features they needed (1) so would perform faster (1).</li> <li>• <u>Multiprocessor</u> (1st) uses more than one CPU at the same time (1) which results in faster processing (1) which would make sure games compile faster (1).</li> <li>• <u>Single user</u> (1st) where higher performance is needed (1) computer resources not shared by other users (1) so games could compile faster (1)</li> <li>• <u>Multi user</u> (1st) resources could be shared between users (1) to make more effective use of hardware/software (1) making the company more efficient (1)</li> <li>• <u>Single processor</u> (1st) non-critical tasks (1) could be performed using cheaper hardware (1) saving the company money (1)</li> </ul>	[4]	<p>Do not accept Off the Shelf Operating System or Open source Operating System as in question 7a and the question asks for <b>other</b> operating systems.</p> <p>The operating systems listed are the only ones mentioned in the specification.</p>
22	(a)	<p>Up to <b>two</b> marks for each of <b>two</b> explanations.</p> <p>e.g.</p> <ul style="list-style-type: none"> <li>• Simpler for end user to set up (1) as no server needed (1).</li> <li>• No additional hardware/router/switch (1) as Bluetooth/Wifi communicates directly with other device (1).</li> <li>• No account/login details/password needed (1) which makes setup quicker (1).</li> <li>• Any other valid suggestion.</li> </ul>	[4]	<p>This question is concerned with the setting up of the game and not the playing of the game.</p>

Question		Answer / Indicative Content	Mark	Guidance		
	(b)	<p><b>One</b> mark for identifying alternative method and up to two marks for description.</p> <ul style="list-style-type: none"> <li>• Client server (1<sup>st</sup>) <ul style="list-style-type: none"> <li>○ where central server (1) facilitates game play (1).</li> <li>○ Game can be streamed(1) from central server(1).</li> <li>○ Increases the number of possible participants(1) due to high performance capability/capacity(1).</li> <li>○ Any other valid suggestion.</li> </ul> </li> </ul>	[3]	<p>Do not accept answers relating to peer to peer technology</p> <p>Correct answer only for first mark but there can be a variety of expansion points.</p>		
23*		<p>Indicative content:</p> <p>Reasons for using both a database server and an application server.</p> <p>e.g.</p> <p>Database server</p> <ul style="list-style-type: none"> <li>• Database server used to run database software.</li> <li>• Much more scalable.</li> <li>• Increased reliability.</li> <li>• store data (employee/user/messages/chat/purchases)</li> </ul> <p>Application server</p> <ul style="list-style-type: none"> <li>• Application server used to run application from.</li> <li>• Two different purposes.</li> <li>• Simplified updates are just needed on the application server instead of each machine</li> </ul>	[10]	7-10	3	<p>The learner has explained the purpose of a database <b>and</b> an application server. The learner has also provided an explanation of reason(s) why <b>both</b> would be used in the context provided.</p> <p>Subject specific terminology and knowledge will be clearly used to support and inform the explanations.</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	2	<p>The learner has described the purpose of a database <b>and/or</b> application server. The learner has also provided a description of why <b>either</b> would be used, for the most part linking their answer to the context provided.</p>

Question		Answer / Indicative Content	Mark	Guidance	
		<ul style="list-style-type: none"> <li>provides the front end to the database data</li> <li>installers can be found on here</li> </ul> <p>Combined</p> <ul style="list-style-type: none"> <li>Both needed to allow scalable data processing and applications to be delivered to staff efficiently.</li> <li>keep data and application separate in order to use the same data in different applications / in order to keep data more secure.</li> <li>Application can be upgraded/updated without affecting the underlying data.</li> <li>Data can be kept in a different physical location to the application, increasing the security.</li> </ul> <p>Any other valid suggestion.</p>			<p>At the bottom of the mark band, the learner may describe just the purpose of a database or application server.</p> <p>Some subject specific terminology and knowledge will be used.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is for the most part relevant and supported by some evidence.</i></p>
			1-3	1	<p>The learner has identified points about a database <b>and/or</b> application server.</p> <p>At the bottom of the mark band, a single point about either server type may be given.</p> <p>Subject specific terminology may be limited or missing.</p> <p><i>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.</i></p>
			0		Nothing worthy of credit.

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