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**INFORMATION AND COMMUNICATION TECHNOLOGY**

**0417/12**

Paper 1 Written Paper

**March 2018**

MARK SCHEME

Maximum Mark: 100

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**Published**

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

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This document consists of **10** printed pages.

**Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

**GENERIC MARKING PRINCIPLE 1:**

Marks must be awarded in line with:

the specific content of the mark scheme or the generic level descriptors for the question  
the specific skills defined in the mark scheme or in the generic level descriptors for the question  
the standard of response required by a candidate as exemplified by the standardisation scripts.

**GENERIC MARKING PRINCIPLE 2:**

Marks awarded are always **whole marks** (not half marks, or other fractions).

**GENERIC MARKING PRINCIPLE 3:**

Marks must be awarded **positively**:

marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate  
marks are awarded when candidates clearly demonstrate what they know and can do  
marks are not deducted for errors  
marks are not deducted for omissions  
answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

**GENERIC MARKING PRINCIPLE 4:**

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

**GENERIC MARKING PRINCIPLE 5:**

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

**GENERIC MARKING PRINCIPLE 6:**

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)	System	1
1(b)	Applications	1
1(c)	A printer	1
1(d)	A compiler	1

Question	Answer	Marks																									
2	<table border="1"> <thead> <tr> <th></th> <th>Optical Mark Reader (✓)</th> <th>Magnetic Ink Character Reader (✓)</th> <th>Bar code reader (✓)</th> <th>Chip and PIN reader (✓)</th> </tr> </thead> <tbody> <tr> <td>Debit card</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>Bank cheques</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>A candidate's responses for multi-choice exam questions</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>A label on a can of soup</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>		Optical Mark Reader (✓)	Magnetic Ink Character Reader (✓)	Bar code reader (✓)	Chip and PIN reader (✓)	Debit card				✓	Bank cheques		✓			A candidate's responses for multi-choice exam questions	✓				A label on a can of soup			✓		4
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A label on a can of soup			✓																								

Question	Answer	Marks
3(a)	<p><b>Two</b> from:</p> <p>Create prosthetics</p> <p>Create dental implants</p> <p>Create customised tablets</p> <p>Create skeletal model</p> <p>Create blood vessels</p> <p>Create anatomical models for surgery</p>	2
3(b)	<p><b>Two</b> from:</p> <p>Create MRI scan images</p> <p>Create ultrasound images</p> <p>Create 3D views of our internal organs</p>	2

Question	Answer			Marks	
4		<b>CD</b> (✓)	<b>DVD</b> (✓)	<b>Blu-ray</b> (✓)	4
	Stores lower quality audio files	✓			
	Has the highest storage capacity			✓	
	The RAM version of this media is used to record and play recorded images at the same time		✓		
	Stores high definition movies			✓	

Question	Answer	Marks
5(a)	<b>Two</b> from: css – Cascading Style sheet Plain text file format Used by web pages to produce a consistent format between different web pages Used in the presentation layer	2
5(b)	<b>Two</b> from: .htm – hypertext markup (language file format) Plain text file format Used in the content layer Consists of a set of <u>markup</u> symbols/codes Tells the web browser how to display the page	2

Question	Answer	Marks																					
6(a)	<table border="1"> <thead> <tr> <th>Test data</th> <th>Type of data</th> <th>Expected Result</th> </tr> </thead> <tbody> <tr> <td>3.4</td> <td>Normal</td> <td>Alert</td> </tr> <tr> <td>1.5 or 2.5</td> <td>Extreme</td> <td>Aware</td> </tr> <tr> <td>1.9</td> <td>Normal</td> <td>Aware</td> </tr> <tr> <td>2.5 or 1.5</td> <td>Extreme</td> <td>Aware</td> </tr> <tr> <td>Positive number below 1.5</td> <td>Normal</td> <td>Safe</td> </tr> <tr> <td>Negative numbers/text</td> <td>Abnormal</td> <td>Error</td> </tr> </tbody> </table>	Test data	Type of data	Expected Result	3.4	Normal	Alert	1.5 or 2.5	Extreme	Aware	1.9	Normal	Aware	2.5 or 1.5	Extreme	Aware	Positive number below 1.5	Normal	Safe	Negative numbers/text	Abnormal	Error	5
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If 1.5 used in 2nd test data then 2.5 must be used in 4th and vice versa																							

Question	Answer	Marks
6(b)	=IF(C4>2.5,"Alert", IF(C4>=1.5,"Aware", IF(C4<0,"Error","Safe")))  IF(C4>=1.5, 1 mark "Aware", 1 mark IF(C4<0, 1 mark "Error", 1 mark "Safe")) 1 mark	5
6(c)	<b>Two</b> from: Select all cells in the spreadsheet Right click and uncheck locked to unlock the cells Highlight B4 to B9 select locked to lock the cells Click review...protect sheet De-select/un-check locked cells	2
6(d)(i)	bar (chart)	1
6(d)(ii)	<b>Four</b> from: Highlight/select/choose A3 to C9 Click Insert Select graph/chart Add/create a chart title Add/create a legend  Or <b>Four</b> from: Highlight/select/choose A4 to C9 Click Insert Select graph/chart Add/create a chart title Add/create data heading Add/create a legend Add/create axes titles	4
6(e)	<b>Four</b> from: Safer than a human measuring the depth of flood water Continuous measurement/monitoring can be carried out 24/7 More accurate readings can be taken The readings will be recorded immediately Won't forget to take readings Charts can be produced automatically More frequent readings can be taken	4

Question	Answer	Marks																		
7	<table border="1"> <thead> <tr> <th></th> <th>Tick (✓)</th> </tr> </thead> <tbody> <tr> <td>CPU means Computer Processing Unit</td> <td></td> </tr> <tr> <td>Data in RAM is not lost when the computer is turned off</td> <td></td> </tr> <tr> <td>ROM is Read Only Memory</td> <td>✓</td> </tr> <tr> <td>A printer is an input device</td> <td></td> </tr> <tr> <td>A touch screen can be an input device and an output device</td> <td>✓</td> </tr> <tr> <td>The control unit is part of the CPU</td> <td>✓</td> </tr> <tr> <td>The CPU is stored on the hard disk</td> <td></td> </tr> <tr> <td>A pen drive is an example of internal memory</td> <td></td> </tr> </tbody> </table>		Tick (✓)	CPU means Computer Processing Unit		Data in RAM is not lost when the computer is turned off		ROM is Read Only Memory	✓	A printer is an input device		A touch screen can be an input device and an output device	✓	The control unit is part of the CPU	✓	The CPU is stored on the hard disk		A pen drive is an example of internal memory		3
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8(a)	<p><b>Six</b> from:</p> <p>Add more navigation/control buttons...  ...for forward/backward/cancel/clear form  Add navigation buttons to make it easier to navigate between pages  Cancel/clear button allows the user the clear the form if errors are made  Fill the screen with the data  Add larger font size  Change font colour to contrasting colours  Change to appropriate size of the boxes to write in the data  Use character boxes for telephone number/ref. No.  Better layout on the screen  Instructions to enter data</p>	6
8(b)	<p><b>Four</b> from:</p> <p>Type the master document/load the master document  Start the mail merge  Attach the database as the data source  Insert appropriate fields/placeholder from the data source  Insert special fields such as automated date field  Select records to merge  Select recipients  Merge a document with selected fields  Save/preview and print/email letters</p>	4

Question	Answer	Marks
9	<p><b>Three</b> from:</p> <p>Scrambling of data  Data cannot be understood by humans if intercepted  Requires the use of an encryption key/ public key/ key to encrypt  Requires the use of a decryption key/key/encryption key to decrypt  Protects sensitive data</p>	3

Question	Answer	Marks																				
10(a)	<p><b>Five</b> from:            A moderated forum is checked/maintained by a moderator/administrator            Moderated forums can reduce freedom of speech/can be biased/Un-moderated forum allows people to post what they like            The moderated forum does not allow inappropriate comments to be posted on the site            Examples of inappropriate language: racist, offensive, swear words, phishing attempts, spam, abusive, unrelated comments – Minimum of 2 examples gains a mark            In a moderated forum those who continually break the rules are banned            Un-moderated tend to be used for spam attacks or phishing attacks            Moderated may be more expensive as they have to appoint a moderator            Posting of moderated comments are delayed as they have to be checked</p> <p><b>One</b> from            Both are interactive websites            Both are discussions            Both require networked computers</p> <p>To gain full marks at least one comparison/similarity is required</p>	6																				
10(b)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="width: 10%; text-align: center;">Blog (✓)</th> <th style="width: 10%; text-align: center;">Wiki (✓)</th> <th style="width: 10%; text-align: center;">Email (✓)</th> </tr> </thead> <tbody> <tr> <td>Interactive cricket club web page that can be viewed and edited by users</td> <td></td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>An online journal written by the club secretary</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>Transmission of messages sent directly to the secretary of the cricket club</td> <td></td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Club members cannot edit the comments posted online</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> </tbody> </table>		Blog (✓)	Wiki (✓)	Email (✓)	Interactive cricket club web page that can be viewed and edited by users		✓		An online journal written by the club secretary	✓			Transmission of messages sent directly to the secretary of the cricket club			✓	Club members cannot edit the comments posted online	✓			4
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10(c)	<p><b>Three</b> from:            Open the file with image editing software            Select the image            Click on Format            Deselect aspect ratio            Change size to 1.3 cm height and 1 cm width/Type in correct measurements in both width and height</p>	3																				
10(d)	<p><b>Two</b> from:            They protect the rights of the artist            To control when and how his work can be used or copied.            It prevents others from using the image <u>without permission</u></p>	2																				

Question	Answer			Marks	
11		<b>User documentation</b> (✓)	<b>Technical documentation</b> (✓)	<b>Both</b> (✓)	5
	Purpose of the system			✓	
	Program listing		✓		
	Input format			✓	
	Error messages	✓			
	Hardware requirements			✓	

Question	Answer	Marks
12(a)	<p><b>Six from:</b></p> <p><b>Benefits</b>            SSD is stored within the computer therefore Ananya has control over her data/in cloud the control may be lost            SSD is a physical storage device in the laptop therefore is present at all times/the cloud is external to the laptop            Once SSD is purchased there are no more costs/the cloud may have costs for extra storage            There needs to be internet access when saving to the cloud/SSD does not necessarily need internet            Transferring data to the SSD may take less time than cloud/low bandwidth            May be more difficult to find data on the cloud than with SSD            Easier to hack the cloud as the data is stored for a long period of time on many servers/less easy to hack SSD as only security on the laptop</p> <p><b>Drawbacks</b>            With the cloud data can be accessed on several devices/SSD would have to have some method of transferring it.            Extra storage can be set automatically on the cloud/SSD is a fixed size            SSD Device can easily be misplaced/damaged            Backups are automatic on the cloud/SSD you may have to set up</p> <p>To gain full marks there needs to be both benefits and drawbacks</p>	6
12(b)	<p><b>Three from:</b>            This allows her to type/enter one email and send it to all her friends at the same time by only typing/entering the name of the group            There is no need to remember her friends email addresses            Fewer errors in the addresses as they are in a list            Saves time to enter the email addresses rather than typing them out            Ensure she does not miss any of her friends out</p>	3



Question	Answer	Marks
13	<p>Matched pairs Electrocution – 1 mark <b>One</b> from: No drinks/food allowed in the computer room Make sure all electrical sockets equipped with RCB/Residual Circuit Breaker Cover all loose wires Check the equipment regularly</p> <p>Fire – 1 mark <b>One</b> from: Use a <u>CO<sub>2</sub></u> fire extinguisher One plug for one socket Do not overload sockets Reduce the need for 4 way adapters</p> <p>Tripping over trailing cables – 1 mark <b>One</b> from: Use cable ducts/place cables under carpet Fasten cables to the wall Use wireless Organise cables</p> <p>Injuries caused by heavy equipment falling off tables – 1 mark <b>One</b> from: Use sturdy tables Place equipment in the middle of the table</p>	<b>6</b>

Question	Answer	Marks
14	<p>To be marked as a level of response:</p> <p><b>Level 3 (7–8 marks):</b>  Candidates will address both the benefits of using robots <u>and</u> the drawbacks of using robots  A discussion of each aspect and comparisons made with human workforce  The benefits and drawbacks of using a human workforce will be explained  The issues raised will be justified  There will be expansion on each of the points made  There will be a reasoned conclusion  The information will be relevant, clear, organised and presented in a structured and coherent format.</p> <p><b>Level 2 (4–6 marks):</b>  Candidates will address both the benefits of using robots <u>and</u> the drawbacks of using robots.  There will be an expansion of the comment beyond a simple statement  Justification will be limited to one side of the argument  There may be a conclusion  For the most part the information will be relevant and presented in a structured and coherent format.</p> <p><b>Level 1 (1–3 marks):</b>  Candidates may only address either the benefits of using robots <u>or</u> the drawbacks of using robots.  The answers given will be statements of fact  The answers may not relate to the question  Answers may be simplistic with little or no relevance.</p> <p><b>Level 0 (0 marks)</b>  Response with no valid content</p> <p><b>Examples:</b>  <b>Benefits of using robots</b>  Port can operate 24/7  Robots work 24/7/all day  Cost is reduced as there is no need to have a massive work force  Less health and safety issues  The robot can easily identify each container to quickly transfer to the lorries  Less expensive in the long term  Greater precision  Higher productivity</p> <p>Less likely to drop the containers</p> <p><b>Drawbacks of using robots</b>  Initial cost is very high  Maintenance cost is high  Some workers are needed to monitor the operation, therefore specialist work  All containers need to be of the same design and type  If something goes wrong, it may be difficult to easily find the error</p>	8