

MARK SCHEME for the May/June 2011 question paper
for the guidance of teachers

**0417 INFORMATION AND COMMUNICATION
TECHNOLOGY**

0417/13

Paper 1 (Written), maximum raw mark 100

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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

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Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
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Ques. No.	Answer	Part mark																		
1	A Microphone C Pen drive B Scanner D Web cam	1, 1 1, 1																		
2	Flash memory card Laser printer Graph plotter Magnetic disc Graphics tablet Touchpad	1 1																		
3	<table border="1"> <thead> <tr> <th></th> <th>True</th> <th>False</th> </tr> </thead> <tbody> <tr> <td>Presentation software is used to create slide shows</td> <td>✓</td> <td></td> </tr> <tr> <td>Laptop computers do not have USB ports</td> <td></td> <td>✓</td> </tr> <tr> <td>DTP software can be used to produce databases</td> <td></td> <td>✓</td> </tr> <tr> <td>Measurement software is used to create magazines</td> <td></td> <td>✓</td> </tr> <tr> <td>Buzzers are input devices</td> <td></td> <td>✓</td> </tr> </tbody> </table>		True	False	Presentation software is used to create slide shows	✓		Laptop computers do not have USB ports		✓	DTP software can be used to produce databases		✓	Measurement software is used to create magazines		✓	Buzzers are input devices		✓	1 1 1 1 1
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4 (a)	A bar code reader is used to input data about products at a POS.	1																		
(b)	A laser printer is used to produce high quality hard copy.	1																		
(c)	A temperature sensor sends data to a microprocessor in a washing machine.	1																		
(d)	A graphics tablet is used to input freehand drawings to a computer.	1																		
(e)	A speaker is used to output sounds from the computer.	1																		
5 (a)	<table border="1"> <tbody> <tr> <td>Database</td> <td></td> </tr> <tr> <td>Keyboard</td> <td>✓</td> </tr> <tr> <td>Spreadsheet</td> <td></td> </tr> <tr> <td>Animation</td> <td></td> </tr> <tr> <td>Microphone</td> <td>✓</td> </tr> <tr> <td>Video camera</td> <td>✓</td> </tr> </tbody> </table>	Database		Keyboard	✓	Spreadsheet		Animation		Microphone	✓	Video camera	✓	1 1 1						
Database																				
Keyboard	✓																			
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Animation																				
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(b)	One advantage from: She can update it more regularly More personal Can be used as a diary More interactive One disadvantage from: Has to be continually updated Animation/video/sound more difficult to incorporate It's possible for people she might not want (e.g. outside school) to see her blog Not everyone she would want to see it might have the internet	2																		

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6	<p><i>PENDOWN</i> LEFT 90 <i>REPEAT</i> 6 FORWARD 50 RIGHT 60 END REPEAT</p> <p>1 mark for each correct statement</p>	<p>Alternative answer: <i>PENDOWN</i> RIGHT 90 <i>REPEAT</i> 6 BACKWARD 50 RIGHT 60 END REPEAT</p>	5																				
7	<p>to produce very large high quality hard copy</p> <p>to display data from a computer on to a large screen</p> <p>to alert mobile phone users to incoming calls</p> <p>to output multipart forms</p>	<p>dot matrix printer</p> <p>plotter</p> <p>multimedia projector</p> <p>buzzer</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>																				
8	<p>Boolean Meaning Data that is only one of two possible values such as yes/no, true/false Example Gender/Absent or present</p> <p>Alphanumeric Meaning Any character of the alphabet or number or punctuation mark Example Name/Tutor group/Address/Phone number</p> <p>Numeric Meaning Must be a digit(s) or decimal number Example Number of siblings/exam marks/number of days present/absent</p>		<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>																				
9	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="width: 10%; text-align: center;">True</th> <th style="width: 10%; text-align: center;">False</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>Records are updated immediately when using online processing</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td>A transaction file is often created when batch processing is used</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td>The processing of bank cheques is an example of batch processing</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td>Batch processing is needed for operating ATMs</td> <td></td> <td style="text-align: center;">✓</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>		True	False		Records are updated immediately when using online processing	✓		1	A transaction file is often created when batch processing is used	✓		1	The processing of bank cheques is an example of batch processing	✓		1	Batch processing is needed for operating ATMs		✓	1		<p>1</p> <p>1</p> <p>1</p> <p>1</p>
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10	<p>Five from:</p> <p>Data is gathered/collected from experts</p> <p>Knowledge base is designed/created</p> <p>A structure to relate each item in the database/knowledge base is created</p> <p>An interrogation technique to access the data is created</p> <p>A user interface/method of displaying the results/method of inputting data/input screen/output screen is designed/created</p> <p>The inference engine is designed/created</p> <p>The rules base is designed/created</p> <p>The system is tested</p>	5
11 (a)	4	1
(b)	7	1
(c)	The Old Curiosity Shop	1
(d)	The Moon's a Balloon	1
(e)	<p>Three from:</p> <p>Format check</p> <p>Checks data in each record is in same format</p> <p>Data in the form dd/mm/yy</p> <p>Must be two digits then slash then two digits then slash then two digits</p> <p>OR</p> <p>Length check</p> <p>No less than 8 characters</p> <p>No more than 8 characters only</p> <p>OR</p> <p>(Invalid) character/type check</p> <p>Only digits or slashes can be entered</p> <p>No alphabetic or punctuation marks other than slash</p> <p>OR</p> <p>Range check</p> <p>Day must be <32</p> <p>Month must be less than 13</p> <p>year must be <100</p> <p>All items must be >0</p> <p>Whole date must be < today</p>	3
12	<p>Three from:</p> <p>Data in main memory can be lost if computer shuts down</p> <p>Data in main memory can be corrupted</p> <p>Data in main memory can be accidentally deleted</p> <p>Data/software may need to be switched from machine to machine</p>	3

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13 (a)	<p>Four from:</p> <ul style="list-style-type: none"> Router to connect LAN to Internet Proxy server to send requests for pages/receive pages for passing on to users Internet browser to search for information Email software to communicate with other (external) users Description of electronic conferencing hardware Description of electronic conferencing software 	4
(b)	<p>Three from:</p> <ul style="list-style-type: none"> Get distracted from own work Viruses could be downloaded Spyware could be downloaded Hackers could get into the system 	3
14	<p>Problem – Description of how electrocution might be caused Prevention – RCB installed/don't allow liquids near computers Problem – trailing cables trips users up Prevention – create ducts/cover cables with carpets etc. Problem – heavy equipment falling injuring users Prevention – sturdy tables Problem – Description of how fire might be caused Prevention – CO₂ extinguisher/don't overload sockets</p> <p>1 mark for each problem (2 max) 1 mark for each prevention (2 max)</p>	4
15	<p>Four from:</p> <ul style="list-style-type: none"> Data fills the screen Clearly defined input area for each field Tick boxes/radio buttons to enter choices drop down menus to select data options Appropriate spacing for each field An easy to read font/font size A sensible font colour/background colour Easy to follow instructions for completing screen/help icon No overlapping of items 	4
16 (a) (b)	<p>Four from:</p> <p>Two strategies and two reasons from:</p> <p>Testing each module with normal/live data/user testing To see how system behaves in an ordinary day to day situation/system works as you would expect i.e. no error messages/to ensure system meets the needs of the user</p> <p>Testing each module with abnormal and extreme data To see how system reacts in unusual circumstances/to make sure error messages appear when data is abnormal</p> <p>Testing whole system To ensure the whole system works when all modules are combined</p>	4

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17 (a)	<p>Sensor – infra red/movement/proximity Use – detect movement of burglar</p> <p>Sensor – pressure Use – detect body weight</p> <p>Sensor – temperature Use – detect body's presence by monitoring temperature</p> <p>Sensor – light Use – detect break in light beam</p> <p>Sensor – sound Use – detect any noise made by burglar</p> <p>1 mark for each sensor (2 max) 1 mark for each use (2 max)</p>	4
(b)	<p>Four from: Microprocessor continually monitors sensors. If light sensor detects light beam interrupted: If movement sensor activated: If contact switch activated: If pressure sensed by processor is greater than preset value: If temperature sensed by processor is greater than preset value: If sound sensed by processor is greater than preset value Microprocessor sends signal to output device.</p>	4
(c)	<p>Four from: Microprocessor controlled devices do much of housework Do not need to do many things manually Do not need to be in the house when food is cooking Do not need to be in the house when clothes are being washed Can leave their home to go shopping/work at any time of the day Greater social interaction/more family time More time to go out/more leisure time/more time to do other things/work Are able to do other leisure activities when convenient to them Can lead to unhealthy eating due to dependency on ready meals Can lead to laziness/lack of fitness Can encourage a healthy lifestyle because of smart fridges analyzing food constituents Microprocessor controlled burglar alarm provides a sense of security Do not have to leave home to get fit Manual household skills are lost</p>	4

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18	<p>Six from:</p> <p><i>Email</i> Advantages Saves school cost of printing copies Can include colour at no extra cost Can include animated text effects</p> <p>Disadvantage Need to have everyone's email address/not every home has an email address/ computer/internet access Email might be treated as Spam People might not welcome unsolicited emails</p> <p>By hand Advantage Can be sure everybody gets a copy Easier to target who head wants to get it</p> <p>Disadvantage Cost of delivery/paying someone to deliver</p> <p>One mark available for reasoned conclusion</p>	6
19 (a)	<p>Three from: Web cam/video camera to input/capture video (images of participants/ documents) Router/modem to transmit data to participants' (computers) Microphone to input voices of participants/to speak to other participants Headphones/speakers to output voices to participants/hear other participants Large screen/projector to see other participants Router to connect to internet Codec to compress data</p>	3
(b)	<p>Two from: Saves travelling time Do not have to pay for conference room Do not have to hire transport/pay travel costs Conferences can be called at short notice Don't have to carry bulky documents to conference</p>	2
20	<p>Three from: Causes data to be scrambled/encoded Requires an encryption key/software to encrypt Requires a decryption key/encryption software to decrypt Results in data which is not understandable/readable Protects sensitive data... ... from being understood if it falls in to the wrong hands</p>	3