MARK SCHEME for the October/November 2012 series

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/11 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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
1 A Webcam  B Speaker  
C Number pad  D Touchpad  

2 graphics tablet  keyboard  laser printer  
motor  optical character reader  web cam  

3

<table>
<thead>
<tr>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer programs are examples of software</td>
<td>✓</td>
</tr>
<tr>
<td>A web authoring package is an example of hardware</td>
<td>✓</td>
</tr>
<tr>
<td>An icon is a component of a command line interface</td>
<td>✓</td>
</tr>
<tr>
<td>A mobile phone (cell phone) uses flash memory</td>
<td>✓</td>
</tr>
</tbody>
</table>

4

(a) A dot matrix printer is used to print on continuous multi-part stationery  
(b) A buzzer is used to output sound  
(c) A graph plotter is used in CAD applications for very large printouts.  
(d) A laser printer is used to produce high quality and high volume printouts.  
(e) A tracker ball is used to move a pointer on a screen.  

5 Three from:

Monitors and controls incoming and outgoing data traffic  
Helps to prevent malware getting into computer/from the internet  
Prevents computer accessing undesirable/unauthorised sites  
Prevents unauthorised computers using the internet accessing the computer  
Keeps a list of undesirable sites/IP addresses  
Keeps a list of acceptable sites/IP addresses  
 Warns you regarding threats/allows you to accept/reject downloaded programs  

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6 (a) Two from:
- Data could be corrupted on original medium
- Data could be accidentally amended/overwritten on original medium
- Data could be accidentally deleted from original medium
- Data could be maliciously deleted from original medium  [2]

(b) Two from:
- Virus is a piece of programming code
- Which replicates itself...
- Can fill up storage medium making it unusable
- Deletes data/change data
- Makes software/operating system unusable  [2 max]

If the original medium has a virus the backup will have it as well/backup will have no effect on the hard disc so it is still susceptible to viruses  [1]

7 Three from:
- Blog usually has a single author/ a Wiki usually has many authors
- Blog is usually in reverse chronological structure/ a Wiki has a structure determined by content and users
- Blog is usually personal/someone’s opinion/ a Wiki is usually objective
- Can’t edit a blog/ a Wiki can be edited/ Can only add comments to a blog  [3]

8

<table>
<thead>
<tr>
<th>Online</th>
<th>Batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying for goods at an EFTPOS</td>
<td>✔</td>
</tr>
<tr>
<td>Producing electricity bills</td>
<td>✔</td>
</tr>
<tr>
<td>Booking a holiday</td>
<td>✔</td>
</tr>
<tr>
<td>Producing payslips</td>
<td>✔</td>
</tr>
</tbody>
</table>
9

<table>
<thead>
<tr>
<th>Command</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PENDOWN</td>
<td>FORWARD 70</td>
</tr>
<tr>
<td>FORWARD 70</td>
<td>REPEAT 4</td>
</tr>
<tr>
<td>RIGHT 90</td>
<td>FORWARD 40</td>
</tr>
<tr>
<td>PENUP</td>
<td>RIGHT 90</td>
</tr>
<tr>
<td>FORWARD 70</td>
<td>END REPEAT</td>
</tr>
<tr>
<td>PENDOWN</td>
<td></td>
</tr>
</tbody>
</table>

1 mark for each statement correctly placed

Other less economical solutions can gain full marks  [8]

10  Five from:

**Benefits:**
- Can call meeting at short notice
- No need to pay travelling expenses
- Can work from home
- Employees will save time travelling
- Do not have to pay hotel expenses
- Do not have to pay for conference room facilities
- Safer as participants do not have to travel
- Don’t have to transport/carry equipment/lots of documents/documents don’t get lost in transit

Four max.

**Drawbacks:**
- Takes time/costs money to learn new technology/to be trained
- Difficult to have international meetings because of time differences
- Initial cost of hardware (and software)
- Equipment can break down/power cuts can stop conference
- Poor strength of signal/time lag/lip sync can be a problem/ connection can be lost
- Loss of personal/social contact
- **Legal** documents cannot be signed

Four max.  [5]
11

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take regular breaks from working at the computer</td>
<td>[1]</td>
</tr>
<tr>
<td>Do not overload electrical sockets</td>
<td>✓</td>
</tr>
<tr>
<td>Make sure all cabling is securely tied</td>
<td>✓</td>
</tr>
<tr>
<td>Sit with your back upright at all times</td>
<td></td>
</tr>
<tr>
<td>Always have a CO₂ fire extinguisher in the room</td>
<td>✓</td>
</tr>
<tr>
<td>Use a wrist rest when typing</td>
<td></td>
</tr>
</tbody>
</table>

12 (a) Two from:

- Temperature
- Humidity
- Moisture
- pH

(b) Sensor measures analogue
- Computer works in digital
- Analogue to digital converter

(c) Four from:

- Microprocessor compares light reading with preset value
- If lower than pre-set value microprocessor sends signal to switch on light bulb
- If higher than pre-set value microprocessor sends signal to switch off light bulb
- Process is continuous/monitoring of sensors is continuous

13 (a) Three from:

- Card number
- PIN
- Expiry date
- Type of card/issuer
- Security number

(b) Three from:

- Card is valid/card number exists
- Card is in date
- PIN entered matches that on card
- Checks if card is stolen

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(c) **Five** from:

Customer bank contacted  
Bank looks up customer account number  
Checks available balance  
Checks daily (card) limit  
If insufficient funds then transaction is rejected  
If sufficient funds then transaction is authorised  
Money deducted from customer account  
Money credited to supermarket account  

14 **(a) Three** from:

Examining documents of the current system  
Distribute questionnaires to users of the current system  
Interview users of the current system  
Observing the current system/workers/users  

(b)

<table>
<thead>
<tr>
<th>Field name</th>
<th>Validation Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book Title/Author</td>
<td>none</td>
</tr>
<tr>
<td>Author/ Book Title</td>
<td>none</td>
</tr>
<tr>
<td>Price</td>
<td>Range check</td>
</tr>
<tr>
<td>Fiction/Non-Fiction</td>
<td>Boolean</td>
</tr>
<tr>
<td>Hardback/Paper back</td>
<td>Boolean</td>
</tr>
</tbody>
</table>

(c) **Any three** matched pairs from

A value between 0 and 20  
This is normal data and should be accepted by the system  

0 or 20  
This is extreme data and should be accepted by the system  

Any number above 20 or text  
This is abnormal data and should be rejected by the system  

[6]
15 (a) Optical Mark Recognition/Reader [1]
Optical Character Recognition/Reader [1]

(b) Six from:

OCR and OMR are quicker methods of entering data compared to a keyboard
OMR has limited uses such as exam answers
OMR can be used in school registers
Optical Character Recognition is more prone to errors
OCR can be used by utility companies to read meters/to make entered text editable
Keyboard is used to input data manually/typing
Keyboard can be more accurate than OCR/less accurate than OMR
Keyboard and OCR can input text more easily than OMR
Pre printed stationery is required for OMR
Specialised equipment is required for OCR/OMR [6]

16 (a)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Robots are cheap to buy</td>
<td></td>
</tr>
<tr>
<td>Running costs are lower as humans have to be paid wages</td>
<td>✓</td>
</tr>
<tr>
<td>Robots never need maintenance</td>
<td></td>
</tr>
<tr>
<td>Humans cannot work continuously</td>
<td>✓</td>
</tr>
<tr>
<td>Robots can work in hazardous conditions</td>
<td>✓</td>
</tr>
<tr>
<td>There is lower productivity with robots</td>
<td></td>
</tr>
<tr>
<td>Robots produce the same standard of finished product every time</td>
<td>✓</td>
</tr>
<tr>
<td>Humans have greater accuracy than robots</td>
<td></td>
</tr>
</tbody>
</table>

[4]

(b) Three from:

Programming robots
Changing robot arm tools/end effectors
Maintaining robots
Supervising operations
Quality control/inspecting finished cars [3]

17 Three from:

installing malicious code on a PC or server
user is redirected to bogus website
user accesses websites which look authentic but belong to the fraudster/hacker
are used to gain bank/personal details [3]

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