CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/12 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 May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
1. A touch screen [1]  
   B scanner [1]  
   C video camera [1]  
   D sensor [1]

2. buzzer  
   DVD R  
   joystick [1]  
   magnetic tape  
   plotter [1]  
   touch pad [1]

3. 

<table>
<thead>
<tr>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>A numeric keypad is used to type a letter</td>
<td>✓</td>
</tr>
<tr>
<td>Word processing software is used to monitor physical variables</td>
<td>✓</td>
</tr>
<tr>
<td>A laser printer works best in an industrial environment</td>
<td>✓</td>
</tr>
<tr>
<td>A palmtop computer is easier to carry than a laptop computer</td>
<td>✓</td>
</tr>
<tr>
<td>Sensors are used to input data to a microprocessor</td>
<td>✓</td>
</tr>
</tbody>
</table>

   [5]

4. ✓

   | ✓ |
   | Hub |
   | Printer |
   | Bridge | ✓ |
   | Router | ✓ |
   | Scanner |
   | Passwords |
   | Monitor |
   | Switch | ✓ |

   [4]

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5

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Measurement only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic cookers</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Weather stations</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Microwave ovens</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Automatic washing machines</td>
<td></td>
<td>✔️</td>
</tr>
</tbody>
</table>

[4]

6

```
PEN DOWN
FORWARD 40
RIGHT 90
FORWARD 70
PENUP
FORWARD 50
PENDOWN
REPEAT 6
FORWARD 80
RIGHT 60
END REPEAT
```  

1 mark for each correct statement

[8]

7 (i) A CD ROM is used to store music for sale
(ii) A blu-ray disc is used to store high definition films
(iii) A magnetic tape is used to store backups of file servers
(iv) A flash memory card is used to store photographs in a digital camera

[4]

8 Four from:

Read only memory
Can be read from but not written to/can't be changed/edited
Used to store BIOS/start up programs for computer
Used to store software that must not change e.g. games
Non-volatile/permanent (memory)

[4]
9 Three from:

Car production is more consistent/robots produce the same standard every time
Cost – once bought they do not have to be paid/fewer employees so lower costs/don’t have to pay robots wages/lower running costs
No industrial disputes
Greater productivity
Greater accuracy/robots are more accurate
Can work in hazardous/extreme conditions/can lift heavier loads
Robots don’t take breaks/can work 24 hours a day 7 days a week/can work continuously [3]

10 (a) 

<table>
<thead>
<tr>
<th></th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graph plotter</td>
<td></td>
</tr>
<tr>
<td>Inference engine</td>
<td>✓</td>
</tr>
<tr>
<td>Interactive input screen</td>
<td>✓</td>
</tr>
<tr>
<td>Knowledge base</td>
<td>✓</td>
</tr>
<tr>
<td>Rules base</td>
<td>✓</td>
</tr>
<tr>
<td>Scanner</td>
<td></td>
</tr>
<tr>
<td>Spreadsheet</td>
<td></td>
</tr>
<tr>
<td>Web cam</td>
<td></td>
</tr>
</tbody>
</table>

(b) Two from:

Medical diagnosis
Prospecting
Tax
Careers
Chess games
Animal/plant classification/identification [2]

11 Three from

Don’t have to type in commands/just use mouse to select options
Easier to change/edit action
Don’t have to learn/be familiar with a lot of commands
Easier to open/load programs [3]
12 (a) Three from:

- Observing the users using the current system
- Questionnaires are distributed to users asking questions about the current system
- Interviewing the users about the current system
- Examining documents from the current system

(b) Visual verification/checking
- Read through data on screen and compare with source document
- Double data entry
- One from:
  - Data is typed in twice by one typist
  - Data is typed in by two operators
  - Computer compares versions

(c) Three from:

- Source document may contain errors
- Verification only checks that data is copied correctly
- Verification does not check if data is reasonable/sensible
- A correct explanation of an example of one validation check

13 (a) Three from:

- A piece of programming code/software/program/script
- It replicates itself
- Attaches itself to files
- Corrupts/deletes files/data
- Can corrupt or erase the contents of the hard disk
- Can completely fill the hard disk/memorY making it unusable/slows down operations
- Makes software/operating system unusable
- One mark is available for an accurate description of method of transmission

(b) Three from:

- Regularly update antivirus/use/install antivirus
- Only use storage media from known sources
- Only accept software/download software from known/trusted websites
- Only visit trusted websites
- Only open attachments from known sources/people you know
14  (a) Three from:

Either
It looks through (the cells) A2 to B9 in Sheet 1
Compares with ‘E’/the contents of B2 (in Sheet 2)

Or
It reads the contents of B2 (in Sheet 2)
Compares with the contents of A2:B9 in Sheet 1

until it finds the first matching value
It records the corresponding value from column 2 of the range A2:B9 in Sheet 1
B2 (in Sheet 2) contains E
Produces /records Edinburgh

(b) London

(c) Three from:

It looks through (the contents of) C9 to C18…
… to see if they contain the code E/contents of B2
Counts all the cells where there is a match
Cell B2 contains the code E
Produces/records the answer 2

(d) 1

(e) Three from:

It reads the contents of B9 (0) and checks if it is greater than 0…
… if it is it records Y
If it is not greater than 0 it records N
In this case it produces/records N

(f) N
15 (a)

<table>
<thead>
<tr>
<th>Field name</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Text [1]</td>
</tr>
<tr>
<td>Camera</td>
<td>Boolean [1], [1]</td>
</tr>
<tr>
<td>Free texts</td>
<td>Integer [1], [1]</td>
</tr>
<tr>
<td>Monthly payment</td>
<td>Currency    [1]</td>
</tr>
</tbody>
</table>

(b) **Three matched pairs** from:

- Range check on Monthly payment
  
  No less than $10, no more than $100

- **(Invalid) character/type check on ‘Free texts’ field**
  
  Only digits allowed

- Presence check on any field
  
  To make sure data has been entered in that field

- Consistency check on Monthly payment field and Free texts field
  
  To make sure that number of free texts corresponds to the monthly payment [6]

16 **Three** from:

- **Limited area of network**

- Strength of signal is weaker

- **Easier** to hack into/less secure

- Physical obstacles can interfere with signal/can cause disconnection [3]

17 **Four** from:

- Internet is network of networks/intranet doesn’t have to be a network of networks

- Internet is global

- Intranet is within one organisation

- Intranet is private/Internet is public

- Intranets tend to be policed/managed

- Intranet has an extra layer of security

- Data found in an intranet is likely to be more reliable/relevant than that found on the Internet

- Internet has more information than an intranet [4]
18 Six from:

Electronic Funds Transfer at Point of Sale
Enables payment for goods at a checkout using credit/debit cards
Goods are purchased and bill is calculated
Customer inserts card into chip reader
Card is checked for validity/reported stolen
PIN is entered
PIN is compared with that stored on the chip
If PIN is OK/verified transaction is authorised
If not, customer is asked to re-enter PIN
Supermarket computer contacts customer’s bank
Checks if sufficient funds
If sufficient funds, transaction is completed/if not, transaction is rejected
Amount deducted from customer’s bank account
Amount credited to supermarket’s bank account
The supermarket EFTPOS terminal produces a receipt