MARK SCHEME for the October/November 2011 question paper
for the guidance of teachers

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 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.

Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
1  A  Magnetic stripe (1)  
    B  Chip (1)  
    C  Optical marks (1)  
    D  Bar code (1)  

2  Buzzer (1)  Graphics tablet  Joystick  
    Monitor (1)  Optical character reader  Web cam  

3  

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer programs are examples of hardware</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>An internet browser is an example of software</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A pointer is used to select items in a command line interface</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A PDA is larger than a desktop computer</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

4  (a) A microphone is used in the recording of voices for presentation software  
    (b) A remote control is used to control a multimedia projector  
    (c) A keyboard is used to write a letter  
    (d) A chip reader is used to read information from a bank card  
    (e) A joystick is used in a flight simulator  

5  Three from:  
    Can act as a web server  
    Can act as a buffer (between internet and LAN)  
    Server passes on requests to the internet  
    Passes the requested web pages to individual computers  
    Can cache/store the webpages  
    Subsequent requests for that/those web page(s) are responded to more quickly  
    Can be used to monitor internet usage  
    Can block certain sites
6 Three from:
- Can store more data
- Easier to carry/more portable
- Majority of computers have USB ports/many school computers don’t have CD drives
- Speed of access is quicker
- Speed of data transfer is quicker
- Pen drives are more robust/less prone to damage [3]

7 PENDOWN
FORWARD 70
PENUP
FORWARD 70
PENDOWN
FORWARD 40
RIGHT 90
FORWARD 50
RIGHT 90
FORWARD 80

1 mark for each pair of statements [5]

8 (a) Two from:
- Web log
- Personal journal/online diary
- Owners’ observations/opinions on a topic
- Can have links to other sites
- Others can post comments
- Frequently updated by owner [2]

(b) Two from:
- Allows users to create/edit web pages using a web browser
- Many people can contribute/edit/update entries
- Anyone can contribute so not to be taken as totally accurate
- Holds information on many topics which can be searched [2]

9

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawing money from an ATM</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Producing utility bills</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Booking a plane ticket</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Producing payslips</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

[4]
10 Three from:
Normal data – data within a (given) range/appropriate for that data type (1)
Abnormal data – data outside the range/of the wrong data type (1)
Extreme data – data on the boundaries of the range (1) [3]

11 (a) Three from:
Computer (readings) more accurate than students
Students might forget to take readings/readings can be taken at regular intervals
Students might be unavailable to take readings during school holidays
Computers can analyse the results immediately/ can produce graphs more quickly
Readings can be taken more frequently
Readings can be taken any time of day or night [3]

(b) Five from:
Save spreadsheet in suitable format
Create graphs
Load word processing software
Frames could be created
Insert spreadsheet/ import spreadsheet/copy and paste spreadsheet/embed spreadsheet
 Insert/copy and paste graphs
Type in text/description of weather
Edit text/description of weather
Import/insert pictures
Format report [5]

(c) Three from:
Cheaper to make than the real thing
Real thing may represent too large a time scale (genetics etc.)
Real thing may be wasteful of materials
Real thing may be on too vast a scale
Easier to change data/variables
Costs less to change data/variables
The real thing may be impossible to access/create [3]

12 Five from:
The stock file is searched
Until a match is found with the entered bar code
The number in stock of the matching record is read
One/number purchased is subtracted from the number in stock
The number in stock is compared with the re-order number
If it is equal to/less than the re-order number then more goods are automatically re-ordered
The new value of number in stock is written back to the file
Next bar code is read [5]
13 (a) C3

(b) Any one of A1:G1 or of A1:A6 or of B2:B6 or B8 or E8 or F8

(c) =E5–D5

(d) =C2*F2 or =C2*(E5–D5)

(e) Two from:
   Highlight/click on/select G2
   Copy G2 and paste into G3:G6
   
   Highlight/click on/select G2
   Copy/Fill down to G6

14 (a) Three from:
   Examining documents about the system
   Distribute questionnaires to users of the system
   Interview users of the system
   Observing the system/staff

(b) Three from:
   Field name
   Field type
   Key field
   Field length
   Validation check/rules

(c) Direct changeover – new system replaces existing system immediately/overnight (1)
   Parallel running – new system runs alongside/together with existing system (1)
   Phased implementation – new system is implemented part by part (1)
   Pilot running – system is implemented in one branch/one office (at a time) (1)
15 (a) **Two** from:
- Optical Mark Recognition
  - Pencil/pen marks are read by scanner/Reader
  - Position of marks are identified [2]
- Exam papers/school registers/lottery/multiple choice questionnaires [1]

(b) **Two** from:
- Optical Character Recognition
  - Text is read by scanner
  - Image compared with characters stored in computer
  - Converted to text for use with other software [2]
- Utility bill/turnaround documents/word processors/mail/passports/id cards/car number plates [1]

(c) **Two** from:
- Magnetic Ink Character Recognition
  - Characters read by magnetic reader
  - Characters compared with characters stored in computer
  - Converted to text for entry into system [2]
- Bank cheques [1]

16 (a) **Three** from:
- Robots produce the same standard every time
- Cost – once bought they do not have to be paid/fewer employees so lower costs
- No industrial disputes
- Greater productivity
- Greater accuracy
- 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 [3]

(b) **Three** from:
- Robots have to be reprogrammed when there is a small change/can’t think for themselves
- Robots need programming in order to be adaptable
- Expensive start up costs – redundancy payments
- Expensive start up costs – have to spend money on training workers to use robots
- Expensive start up costs – buying of robots/programming of robots
- Computer crash would halt production
- Maintenance/repair costs can be expensive [3]
17 **Hardware:**
- Network cards
- Modem/router
- Hub

**Software:**
- (Internet) browser
- Firewall software
- Anti-virus software
- Anti-spyware software

**Others:**
- ISP
- Cables
- Telephone line

Must have at least one hardware item and one software item to gain full marks. [4]

18 (a) **Two** from:
- Pressure
- Moisture
- Motion

(b) Computers work in **digital**
- Sensors send **analogue** data
- ADC

(c) Compares temperature with pre-set value
- If temperature lower than preset value microprocessor switches on heater
- If temperature higher than/equal to preset value microprocessor switches off heater/does nothing

19 **Two** from:
- Visual verification/checking
- Read through data on screen
- Compare with source document

**Two** from:
- Double data entry
- Data is typed in twice by one typist
- Data is typed in by two operators
- Computer compares versions
- If different freezes/sounds buzzer