**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education**

## MARK SCHEME for the May/June 2015 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.

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**1** **(a)** Sensor [1]
Touchpad [1]

**(b)** Printer [1]
Screen [1]

**(c)** Pen drive [1]
DVD drive [1]

**2**

| Use | MICR ✓ | Trackerball ✓ | Sensor ✓ | |
|---|---|---|---|---|
| Reading data from a cheque | ✓ | | | [1] |
| Inputting the temperature of a greenhouse | | | ✓ | [1] |
| People with limited motor skills using computers | | ✓ | | [1] |
| For inputting the amount of humidity in a weather station | | | ✓ | [1] |

**3**

| Application | Device | |
|---|---|---|
| Produces very high quality printing where speed is not an issue | Inkjet printer | [1] |
| Production of continuous stationery where noise is not an issue | Dot matrix printer | [1] |
| Produces rapid, high quality and high volume printing | Laser printer | [1] |
| Produces very large printouts such as size A0 | Graph plotter | [1] |

**4**

| | Blog ✓ | Microblog ✓ | Wiki ✓ | |
|---|---|---|---|---|
| Very restricted on size of post | | ✓ | | [1] |
| Allows readers to edit posts | | | ✓ | [1] |
| Entries are **not** usually in chronological order | | | ✓ | [1] |
| Very difficult to customise | | ✓ | | [1] |

**5** **(a)** The type of processing used for processing cheques is called **batch** [1]

**(b)** The type of access used on a magnetic disc is called **direct** [1]

**(c)** An item of hardware which is used to open a window is called a **motor** [1]

**6**

| | | | | |
|---|---|---|---|---|
| PENDOWN | PENDOWN | | PENDOWN | PENDOWN |
| LEFT 90 | REPEAT 2 | | LEFT 90 | FORWARD 30 |
| FORWARD 20 | FORWARD 30 | | FORWARD 20 | RIGHT 90 |
| RIGHT 90 | RIGHT 90 | **OR** | RIGHT 90 | FORWARD 30 |
| PENUP | END REPEAT | | PENUP | RIGHT 90 |
| FORWARD 10 | FORWARD 30 | | FORWARD 10 | FORWARD 30 |

**1** mark for each correct instruction [6]

**7** **(a)**

| | |
|---|---|
| Pressure sensor | ✓ |
| Oxygen level sensor | |
| Wind speed sensor | |
| Sound sensor | ✓ |
| Body sensor | |
| Moisture sensor | |
| Infra-red sensor | ✓ |
| Touch sensor | |

[1] [1] [1]

**(b)** **Five** from:

Microprocessor checks input from the user is authentic
Microprocessor continually monitors sensors.

If infra-red sensor reading changes
If pressure greater than pre-set value...
If sound greater than pre-set value...
Microprocessor sends signal to sound alarm
Microprocessor sends signal to flashing light/house lights.
Microprocessor automatically sends message/calls/texts owner [5]

**8** **(a)**

| Activity | Analysis ✓ | Design ✓ | Evaluation ✓ | |
|---|---|---|---|---|
| Interviewing the users of the new system | | | ✓ | [1] |
| Interviewing the users of the existing system | ✓ | | | [1] |
| Planning the validation routines | | ✓ | | [1] |
| Examining existing documents | ✓ | | | [1] |

**(b)** **Three** names and descriptions from:

Parallel running
Current system and new system run alongside each other

Pilot running
New system introduced in one branch and other branches continue with old system

Direct changeover
New system replaces old system <u>immediately/overnight</u>

Phased implementation
New system is introduced one module/step at a time [6]

**(c)** **Three** from:
Program listing
Name of program language
Flowchart/algorithm
List of variables
File structure
Purpose of the system/program
Purpose of the program
Input format or example
Output format or example
Hardware requirements
Software requirements
Sample runs/test runs
Known bugs
Validation routines
Limitations of the system [3]

**(d)** **Three** from:
How to load software/ run software/install software
How to save a file
How to search
How to sort
How to print
How to add records
How to delete/edit records
Troubleshooting guide/contact details/help line/FAQs
Error messages/handling
Tutorials [3]

**9** **(a)** **two** from:

Visual verification
Visually comparing the data on screen…
…with the source document

**OR**

**two** from:

Double data entry
Data is typed in twice by one typist
Data is typed in by two operators
Computer compares versions [2]

**(b)** Type in =d3/c3 [1]
*100 [1]

OR OR

Type in =d3/c3 in e3 [1]
Set the format to % [1]

**(c)** **Three** from:

Click on E3
Manoeuvre to bottom right hand corner of cell
Until black cross appears
Black cross dragged down to E22

Or **three** from:

Right click on E3
Select copy from menu
Select E4 to E22
Right click and click on paste [3]

**(d)** **Two** from:

Less dangerous to use a model
Real thing may represent too large a time scale/ it may take a long time to obtain results from the real thing - genetics etc. Too large a time scale required
Real thing may be wasteful of materials
Real thing may be on too vast a scale
Easier to change data/variables
The real thing may be impossible to access/create
You can test predictions more easily/model can make predictions more accurately
You can ask many whatif questions which would be impractical in real life [2]

**10**

| | |
|---|---|
| Redundancy payments to former workers are expensive | ✓ |
| The cars produced are not of a consistent standard | |
| Robots are unable to think for themselves | ✓ |
| Robots do not go on strike | |
| Robots are expensive to buy | ✓ |
| Mistakes are never made. | |
| Maintaining robots costs money | ✓ |
| Car workers have to be paid more | |

[1] [1] [1]

**11 (a)** **Two** from:
Electronic junk mail/sending of unsolicited emails
Sent to everybody on a mailing list/many emails sent at once
Can slow down networks
Can fill up the receiver's mail box and therefore hard disk [2]

**(b)** **Four** from:
Phishing
Fraudster sends an e-mail which appear to be authentic
is sent by a fraudster posing as a bank/organisation
provides a link to a bogus website

Pharming
installing malicious code on a pc or server
user is redirected to bogus website
user accesses websites which look authentic
website belongs to the fraudster/hacker [4]

**12 (a)** **three** from:
Network cards
Modem/Router
Hub/switch
Cables
Telephone line [3]

**(b)** **Three** from:

Using social networks
Booking tickets
Playing educational games
Watching videos/music
Send/receive emails
Create a blog/description of blogging
Researching current affairs/school work
Looking at the news
Reading ebooks/books online [3]

**(c)** **Two** from:
Copy onto removable storage medium
At regular intervals
Store the medium away from the computer
Make incremental backups [2]

**(d)** **Two** from:
User id can sometimes be easily guessed
Passwords can be hacked with key logging software
Passwords can be hacked by using random password generators

**Four** from:
Question is asked such as mother's maiden name/customer's birthplace/date of birth
Question selected can be difficult to answer by hacker.
Answers can be intercepted by hacker
Using a chip and pin reader with bank card to generate a one off transaction code which user enters into online banking
Bank issues a one off transaction code to the user's phone which user enters into online banking
Even if hacker intercepts code is no use to him/her as can only be used once
Inconvenient as have to keep reader and card with you if you want to bank remotely
Using fingerprint scanner to capture digital image of fingerprint
Each fingerprint is virtually unique/ Each retina is unique/ Each iris is virtually unique
Fingerprint scanners can be inaccurate
Fingerprints can alter when people do sustained heavy manual work
Civil liberty issues
Using a retina scanner to detect retina pattern
Cataracts/astigmatism can affect accuracy of reading
Equipment cost is high
Using a digital camera to record image of the iris
High quality images of an iris can be used to 'fool' the system
Biometrics are nearly impossible to forge [6]

**13 (a)**

| Field name | Data type | |
|---|---|---|
| *Film_title* | Text/alphanumeric | [1] |
| Format/blu-ray/DVD | Boolean | [1], [1] |
| Rental_Cost | Currency | [1], [1] |
| *Name_of_director* | Text/alphanumeric | [1] |

**(b)** **Four** from:
set up a query
rental cost < 3
select appropriate fields to include in report
create an appropriate report title
set up a header
set up a footer
use appropriate alignment within fields
Select appropriate font/font size for heading
Select appropriate font/font size for field names
Select appropriate font/font size for field contents [4]

**14** **Six** from:
*Borrower:*
Advantages:
Saves cost of travelling to the library
Saves time of travelling to library
More likely to be able to borrow a particular book/library has more copies
Will not be fined for going over borrowing period
Disadvantages:
Might not have finished reading book when it disappears
Have the expense of buying the correct hardware

*Library:*
Advantages:
Saves cost of salaries as some staff have been made redundant
Librarians will have more time to spend on other duties
Don't have to worry about books not being returned
Disadvantages:
Will lose income from not collecting fines [6]