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.

Cambridge will not enter into discussions about these mark schemes.

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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	<u>PENDOWN</u>		PENDOWN	PENDOWN
LEFT 90	<u>REPEAT 2</u>		LEFT 90	FORWARD 30
FORWARD 20	<u>FORWARD 30</u>	**OR**	FORWARD 20	RIGHT 90
RIGHT 90	<u>RIGHT 90</u>		RIGHT 90	FORWARD 30
PENUP	<u>END REPEAT</u>		PENUP	RIGHT 90
<u>FORWARD 10</u>	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] (Pressure sensor)
[1] (Sound sensor)
[1] (Infra-red sensor)

(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 immediately/overnight

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	✓	[1]
The cars produced are not of a consistent standard		
Robots are unable to think for themselves	✓	[1]
Robots do not go on strike		
Robots are expensive to buy	✓	[1]
Mistakes are never made.		
Maintaining robots costs money	✓	[1]
Car workers have to be paid more		

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]