

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

**0417 INFORMATION AND COMMUNICATION
TECHNOLOGY**

0417/13

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) **Two** from:
Microphone
Keyboard
Mouse [2]

(b) Speakers [1]
Screen [1]

(c) **Two** from:
DVD drive
Internal hard disc drive
Pen drive [2]

2

Reading data from bank cheques			✓	[1]
Reading data from candidate exam answer papers	✓			[1]
Inputting data ready for processing by a word processor		✓		[1]
Inputting pencil mark data from a school register	✓			[1]

3

Dot matrix printer	printing on multipart stationery	[1]
Chip reader	reading information from the front of bank cards	[1]
Magnetic tape drive	making fileserver backup copies	[1]
Bar code reader	to read data from a product at a POS terminal	[1]

4

It is easy to keep in immediate contact with friends	✓		[1]
You can share photographs with friends	✓		[1]
You can do internet banking using a social networking site		✓	[1]
You can access everybody's personal details		✓	[1]

5 (a) On-line [1]

(b) Serial [1]

(c) Sensor [1]

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- 6
- | | | |
|------------|------------|--|
| PEN DOWN | FORWARD 20 | |
| LEFT 90 | RIGHT 90 | |
| FORWARD 20 | FORWARD 70 | |
| RIGHT 90 | REPEAT 2 | |
| PENUP | RIGHT 90 | |
| FORWARD 15 | FORWARD 35 | |
| PENDOWN | END REPEAT | |
- 1 mark for each correct instruction [6]
- 7 (a) Temperature [1]
Time [1]
- (b) Five from:
- Microprocessor switches heater on
 - Microprocessor receives data from temperature sensor
 - Temperature of oven is compared with pre-set value by microprocessor
 - If higher microprocessor switches heater off
 - If lower microprocessor leaves heater on
 - Time is constantly monitored by microprocessor
 - Time elapsed/finish time is compared to pre-set time by microprocessor
 - If equal then heater is switched off by microprocessor...
 - ...microprocessor causes buzzer to sound [5]
- 8 (a) Range check [1]
- (b) (i) 0, 25 or 80 [1]
- (ii) 0 or 80 [1]
- (iii) 87 [1]
- (c) =if(C2>=45,"Pass","Fail")
- Correct syntax of if() [1]
 - C2>=45 [1]
 - "Pass", "Fail" [1]

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(d) **Three** from:

Click on D2 and manoeuvre to bottom right hand corner of cell
 Until black cross appears
 Drag black cross down to D32

Or

Right click on D2 select copy from menu
 Select D3 to D32
 Right click and click on paste

Or

Highlight cells D2 to D32
 Click on Fill
 Click on down

[3]

(e) **Two** from:

Cost of building real thing may be expensive
 Real thing may waste raw materials/natural resources
 Easier to change data/variables
 Costs less to change data/variables
 The real thing may be impossible to access/create
 Real thing may be on too vast a scale
 Extremes which can't be tested in real life can be tested using models

[2]

9 (a) A flowchart

[1]

(b) Analysis

[1]

(c) Hacking

[1]

(d) A password

[1]

10

Higher charges can be made		
They have fewer bad risks		
Less paid out in wages as fewer staff need to be employed	✓	[1]
Lower costs as fewer buildings need to be rented	✓	[1]
A wider customer base is available	✓	[1]
Mistakes are never made.		
Less actual cash handled so there are fewer robberies	✓	[1]
The initial cost of hardware is cheap		

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11 (a) **Four** 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

[4]

(b) **Two** from:

- It is quieter
- They have a safer environment
- It is a cleaner environment

[2]

12

Producing the payroll	
Producing utility bills.	
Printing credit card statements.	
Paying for goods using EFTPOS.	✓
Processing bank cheques overnight	
A microprocessor controlled greenhouse.	✓

[1]

[1]

13 (a) **Two** from:

- Primary key/key field(s)/foreign key would be identified...
- ...would be used to link the tables together

[1]

[1]

(b) **Two** from:

- Data does not have to be typed in twice
- Quicker to enter/update/edit data
- Fewer errors are likely
- Reduces storage requirements

[2]

(c) **Three** from:

- Can store vast amount of information
- Has a fast data access speed
- Has a fast data transfer speed
- Most computer systems come with hard discs

[3]

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- (d) *Member number*: Length check/(invalid) character check/type check/range check
Sport code: Length check/format check [2]
- (e) Chip reader/magnetic stripe reader [1]
- (f) **Two** from:
 It is faster to enter data
 More accurate/fewer errors [2]
- (g) **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
 Purpose of the system
 Input format or example
 Output format or example
 Hardware requirements
 Software requirements
 Sample runs/test runs
 Limitations of the system
 Troubleshooting guide/contact details/help line/FAQs
 Error messages/handling
 Tutorials [3]
- (h) **Three** from:
 Program coding/listing
 Name of program language
 System flowchart
 Program flowchart/algorithm
 List of variables
 File structure
 Known bugs
 Validation routines
 Purpose of the program [3]

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14 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]**15 (a) Three** from:

- Microprocessor controlled devices do much of housework
- Do not need to do many things manually
- Do not need to be in the house when food is cooking
- Do not need to be in the house when clothes are being washed
- Can leave their home to go shopping/work at any time of the day
- Greater social interaction/more family time
- More time to go out/more leisure time/more time to do other things/work
- Are able to do other leisure activities when convenient to them
- Microprocessor controlled burglar alarm provides a sense of security
- Do not have to leave home to get fit
- Can encourage a healthy lifestyle because of smart fridges analyzing food constituents

[3]**(b) Three** from:

- Can lead to unhealthy eating due to dependency on ready meals
- Can lead to laziness/lack of fitness
- Manual household skills are lost
- These may malfunction and, because the individual has left the device unattended, this can lead to fires/damage to the house

[3]**16 Three** matched pairs (with a different method for each one) from:

- Data could be amended
- Use a username and password so that only the person who knows these can access the data
- Use biometrics so that only that person who has those characteristics can access the data
- Use a firewall which prevents unknown computers accessing a network

Data could be deleted

- Use a username and password so that only the person who knows these can access the data
- Use biometrics so that only that person who has those characteristics can access the data
- Use a firewall which prevents unknown computers accessing a network

Data could be read and passed on

- Encryption so that data is unreadable to unauthorised users

[6]

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17 Four from:

If computer is switched off work in RAM goes but backing storage stores data for future use
Backing storage is cheaper than IAM per unit of memory so more cost effective to have both
IAM is bulkier than backing storage per unit of memory so more sensible to have both
IAM provides faster access than backing storage so as there has to be backing storage computer needs IAS to speed up operations
Software package may be so large that it is physically impossible for RAM to store it
Data may need to be transferred from one computer to another and can't do that with RAM

[4]