

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**  
International General Certificate of Secondary Education

**MARK SCHEME for the May/June 2012 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.

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- 1 A Microphone [1]  
 B Webcam [1]  
 C Remote control [1]  
 D Number pad [1]

2 **buzzer**                      **DVD R**                      **joystick**                      [1]

**magnetic tape**                      **plotter**                      **touch pad**                      [1]

3

	True	False
A scanner is used to enter a PIN		✓
Word processing software is used to write letters	✓	
Database software is used to create newspapers		✓
A command line interface uses icons to represent applications		✓
Sensors are used to monitor physical variables	✓	

[5]

4

	Abnormal	Extreme
20		✓
21	✓	
twenty	✓	
0		✓

[4]

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**5 Three pairs from:**

Hub

Broadcasts data packets to computers in a LAN

Router

Connects LANs to a WAN/Internet

Switch

Directs data packets to specific computers

NIC

Enables computers to be connected to a network

Bridge

Connects networks/LANs together/Directs data packets to specific networks

Proxy server

Stores web pages for faster re-use by computers/can act as a firewall

Modem

Modulates data and demodulates phone signals

[6]

**6**

	<b>LAN</b>	<b>WLAN</b>
Uses wireless technology to transmit data		✓
Faster transmission of data	✓	
Greater security	✓	
Is cheaper as there is less cabling		✓

[4]

**7** *PEN DOWN*

*FORWARD*

300

*RIGHT*

90

*PEN DOWN*

*REPEAT*

.....8.....

*REPEAT*

.....6.....

***FORWARD*.....**

100

***FORWARD*.....**

80

*LEFT*

.....45.....

***LEFT*.....**

60

***END REPEAT*.....**

***END REPEAT*.....**

*PENUP*

1 mark for each correct statement

[8]

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- 8 A blu ray disc is used to store high definition copies of movies  
 A graphics tablet is used to retouch photographs  
 An inkjet printer is used to print out photographs  
 A motor is used to open windows in a greenhouse  
 An Optical Mark Reader is used to input candidate examination answers [5]
- 9 **Three** from:  
 If computer is switched off work in RAM goes but backing storage stores data for future use  
 More likely that data is accidentally deleted in RAM  
 RAM is more expensive than backing storage per unit of memory  
 RAM is bulkier than backing storage per unit of memory  
 RAM provides faster access than backing storage  
 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 [3]
- 10 (a) **Three** from:  
 Temperature sensor  
 Light sensor  
 pH sensor  
 O<sub>2</sub> sensor  
 CO<sub>2</sub> sensor [3]
- (b) **Five** from:  
 The sensors feed back data to microprocessor/computer  
 Data is converted from Analogue to Digital  
 Readings from A are compared with those from B...  
 .....by the computer/microprocessor  
 Differences are printed out  
 Graphs are automatically produced by computer showing values from A and B..  
 ...plotted against time  
 Process is continuous. [5]
- 11 (a) **Four** from:  
 User interface  
 Rules base  
 Knowledge base  
 Inference engine [4]
- (b) **Two** from:  
 Engine car fault diagnosis  
 Prospecting  
 Tax  
 Careers  
 Chess games  
 Animal/plant classification [2]

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**12 Three pairs from:**

Length check

Checks there are exactly 16 characters

Invalid character/type check

Checks all characters entered are digits

Check digit

Single digit calculated from other digits appended to these, computer carries out fresh calculation on digit and compares answer with original check digit.

Existency check

Is the card number on the database

[6]

**13 RSI in the wrists – caused by repetitive typing/prolonged gripping of mouse**

[1]

RSI in the fingers – caused by repetitive clicking of mouse

[1]

Headaches – staring at the screen for too long

[1]

Back pain – sitting in the same position for long periods

[1]

**14 Three matched triples from:**

User ID and password

Benefit – each user ID could be unique/only user will know the password/data can only be accessed by person who knows the password/Password can be changed frequently to avoid hackers guessing them/Unsuccessful logins can throw you out of the system

Drawback – user might forget password/keylogging software can be used to intercept it

Biometrics

Benefit – each user has unique biometrics

Drawback – equipment is expensive to buy/may be difficult or expensive to get equipment to user

Magnetic/chip card with PIN

Benefit – Hacker needs to have the card and know the PIN

Drawback – can lose the card/can forget PIN

TAN

Benefit – Always changing so a hacker would not be able to use it even if they intercepted it when user typed it in.

Drawback – need to have card and remember PIN and use it within a short period of time.

[9]

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15 (a) Would always be the same contents/waste space putting in duplicated field [1]

(b)

Field name	Validation check
Model	Must be Feisty or Mendo or Galactica
Colour	Must be red, blue or gold
Air conditioning	Boolean check - Must be yes or no
Number of doors	Range check $>2$ AND $<6$ / $\geq 3$ AND $\leq 5$

[7]

(c) Six from:

Validation is the checking that data is reasonable or acceptable

Verification is checking that data has been accurately copied from one medium to another.

Verification does not check that data is correct

If original data is incorrect it will still be incorrect after it has been copied accurately

Validation does not check that data is correct

If, for example, data is incorrect but within a given range, a range check won't reject it

Validation will pick up errors that verification does not

Verification will pick up errors that validation does not

Verification can sometimes be carried out by the user

Validation is always carried out by the computer

[6]

16 (a) Three from:

It looks through the cells A2 to B7...

...in Sheet 1

Until it finds the value equal to the contents B2 (BAH) in sheet 2

B2 in sheet 2 contains BAH

It records the corresponding value from column 2 of sheet 1

Produces Bahamas

[3]

(b) Maldives

[1]

(c) Three from:

It looks through A8 to A18

Cell B2 contains the code BAH

Checks whether A8 to A18 contains the code BAH/contents of B2

Counts all the cells where there is a match

Produces the answer 3.

[3]

(d) 4

[1]

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(e) **Four** from:

Benefits

Real thing may be too expensive to build

Real thing requires too large a time scale

Real thing would be too wasteful of materials

Real thing is too vast a scale

Easier to change data/variables

Costs less to change data/variables

The real thing may be impossible to access/create

Real thing may be too dangerous

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

Drawbacks

Can never allow for all eventualities

Difficult to exactly recreate a lifelike situation

Hardware and software may be expensive

Workers will need to be trained to use the system

Max. 3 drawbacks or benefits

[4]