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

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UNIVERSITY of CAMBRIDGE
International Examinations

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]

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

	LAN	WLAN
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]

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_2 sensor
CO_2 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]

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]

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 / >=3 AND <=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]

(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]