CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/13 Paper 1 (Written), maximum raw mark 100

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1 A mainframe computer [1]
B laptop computer [1]
C personal digital assistant [1]
D desktop computer [1]

2 buzzer DVD R fixed hard disc [1]

joystick plotter touch pad [1]

3

	True	False
Database software is the best software to use to write letters.		✓
DTP software is used to create models.		✓
Palmtop computers are bigger than PCs.		✓
Graph plotters are used to output car designs.	✓	
A dot matrix printer is used to print magazines.		✓

[5]

4 **Two** matched pairs from:

Range check
Check no less than 0 and no more than 100

(Invalid) character check/Type check
Must be digits only

Presence check
Mark must be entered [4]

5

	RAM	ROM
This memory can only be read from not written to		✓
This memory is not volatile		✓
This memory is used to store the data the user is currently working on	✓	
This memory is used to store the startup instructions of a computer		✓

[4]

6

To input details from a bank card	**Chip reader**
To input data from a school register	**Optical mark reader**
To input details of a product in a supermarket	**Bar code reader**
To control an object in a computer game	**Joystick**

[4]

7 Four matched pairs from:

INSTRUCTION	MEANING
FORWARD *n*	Move *n* mm forward
BACKWARD *n*	Move *n* mm backward
LEFT *t*	Turn left *t* degrees
RIGHT *t*	Turn right *t* degrees
PENUP	Lift the pen
PENDOWN	Lower the pen

1 for instruction
1 for meaning [8]

8 **Two** from:

Optical Character Recognition/Reader
Text is read by scanner
Image compared with characters stored in computer
Converted to text for use with other software [2]

Utility bills/word processors/ANPR/identity cards [1]

9 **(a)**

	✓
Hyperlinks	✓
Colour	
Large font size	
Photos	
Sound	✓
Video	✓

[3]

(b) **Three** from:

Saves school cost of printing copies
Can include colour at no extra cost
Can include animated text effects
Saves cost of delivery
Audience not limited to parents of school children [3]

10 **Four** from:

Weblog
Usually one author
Personal opinions on a number of topics/personal thoughts
Can be an electronic diary
Others can comment
Only author can edit entries [4]

11 **Five** from:

Data is read by sensors/downloaded from onboard computer/entered using keyboard/touch screen/answers to questions are typed in
Uses interactive interface/Asks questions...
.....based on previous responses
Expert system analyses data
Inference engine compares data
Compares data with that held in the knowledge base.....
..... using rules base
Matches are found
System suggests possible faults/solutions [5]

12 **(a)** **Two** from

Keypad to input required temperature
Sensor to input current temperature of the room [2]

(b) **Four** from:

Microprocessor stores required temperature as preset value
Compares temperature from sensor to pre-set temperature
If temperature is lower than preset value microprocessor sends a signal to turn heater on
If higher than preset value microprocessor sends a signal (to the actuator) to turn heater off
If values are equal microprocessor does nothing
Wait set period of time before looping [4]

13 (a)

Field name	Data type	
Name	**Text**	
Gender	Boolean	[1, 1]
Species	Text	[1]
Weight (kg)	Numeric	[1]
Adoption cost	Currency	[1]

(b) Technical [1]

Two from:

Program listing
Programming language
Flowchart/algorithm
List of variables
File structure
Purpose of the system/program
Input format or example
Output format or example
Hardware requirements
Software requirements
Sample runs/test runs
Known bugs/possible errors
Validation rules
Limitations of the system [2]

User [1]

Two from:

How to load software/install/run 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/program (only if not mentioned in technical documentation)
Input format or example (only if not mentioned in technical documentation)
Output format or example (only if not mentioned in technical documentation)
Hardware requirements (only if not mentioned in technical documentation)
Software requirements (only if not mentioned in technical documentation)
Sample runs (only if not mentioned in technical documentation)
Error messages (only if not mentioned in technical documentation)
Error handling
Limitations of the system
Tutorials
Troubleshooting guide/Contact details/help line/FAQ [2]

14 **Two advantages** from:

Easy to carry/are portable
Usually have mobile phone in your possession
Can access Internet almost anywhere
Can access Internet on the move [2]

Two disadvantages from:

Easily lost
May have poorer signal
Display is smaller/keyboard is smaller
Content is more limited
Can be slower to access Internet
Batteries might run out
No mouse so can be more difficult to navigate [2]

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

Either
It looks through (the cells) A2 to B9 in Sheet 1
Compares with 'USA'/the contents of C3 (in Sheet 2)

Or
It reads the contents of C3 (in Sheet 2)
Compares with the contents of A2:B9 in Sheet 1

until it finds the first matching value
It records the corresponding value from column 2 of the range A2:B9 in Sheet 1
C3 (in Sheet 2) contains USA
Produces /records America [3]

(b) Thailand [1]

(c) **Two** from:

It totals the contents
Of cells D3 to F3 [2]

(d) **Three** from:

It looks through the contents of D4 to F4…
…to see if they are not equal to NT
It counts the number of cells that are not
Produces/records 2 [3]

(e) **3** [1]

(f) **Three** from:

Creating a model of a real system (such as a cockpit)…
…in order to study the behaviour of the system/pilot reactions
Is able to predict/react to the behaviour of the system or pilot
The cockpit simulation has all the controls normally found in an actual cockpit
Creating models of situations that pilots might meet in real life/Creates whatif scenarios [3]

16 (a) **Three** from:

Can act as a web server
Can act as a buffer (between Internet and LAN)
Server passes on requests to the Internet
Passes the requested web pages to individual computers
Can cache/store the webpages
Subsequent requests for that/those web page(s) are responded to more quickly
Can be used to monitor Internet usage
Can block certain sites [3]

(b) **Three** from:

Connects a LAN to a WAN
Connects a LAN to the Internet
Forward data packets to the individual computers on a network
Hold the addresses of each computer on the network [3]

17 (a) **Two** from:

Lawful protection....
.....given to authors/software companies and publishers
Relates to the software the author/publisher/company created/published
Prohibits purchaser from making unlimited copies/lend it to others/change the software/sell it without the company's permission [2]

(b) **Two** from:

Encryption of the execution code requires a key to run
Use of a dongle
Registration system requiring the typing in of a registration code
"Guards" are hardware or software modules that monitor the running program and ensure that it has not been tampered with in any way
Activation code which can be used only on a limited number of machines [2]

18 **Seven** from:

Car production is more consistent/robots produce the same standard every time
Cost – once bought they do not have to be paid/fewer employees so lower costs/don't have to pay robots wages/lower running costs
No industrial disputes
Greater productivity
Greater accuracy/robots are more accurate
Can work in hazardous/extreme conditions/can lift heavier loads
Robots don't take breaks/can work 24 hours a day 7 days a week/can work continuously
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 [7]