

MARK SCHEME for the May/June 2013 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.

Cambridge will not enter into discussions about these mark schemes.

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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]

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- 6 To input details from a bank card → Joystick
 To input data from a school register → Chip reader
 To input details of a product in a supermarket → Optical mark reader
 To control an object in a computer game → Bar code reader
- [4]

7 Four matched pairs from:

INSTRUCTION	MEANING
FORWARD <i>n</i>	Move <i>n</i> mm forward
BACKWARD <i>n</i>	Move <i>n</i> mm backward
LEFT <i>t</i>	Turn left <i>t</i> degrees
RIGHT <i>t</i>	Turn right <i>t</i> 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]

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(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]

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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]

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(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]

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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]