

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

**MARK SCHEME for the May/June 2014 series**

**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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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- 1 A Desktop computer [1]  
 B Inkjet printer [1]  
 C Optical disc [1]  
 D Trackerball [1]

- 2 **Two** from:  
 Motor  
 Light  
 Heater  
 Monitor  
 Printer  
 Graph plotter  
 LED display  
 LCD display  
 Buzzer [2]

- 3 **Two** from:  
 Faster data access times  
 Faster data transfer rate  
 Stores more data [2]

- 4
- |                                                             | True<br>✓ | False<br>✓ |
|-------------------------------------------------------------|-----------|------------|
| OMR is used to read data from multi choice question papers. | ✓         |            |
| OCR is used to read data from word processed documents.     | ✓         |            |
| DTP is used to create financial models.                     |           | ✓          |
| Regular use of computers improves your eyesight.            |           | ✓          |
- [1]  
[1]  
[1]  
[1]

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5

Fewer books can be borrowed.	
Libraries can stay open longer.	
More information is more easily available to borrowers.	✓
More people work at the library.	
Nobody borrows books any more.	
The librarian is automatically notified when books are late.	✓

[1]

[1]

- 6
- |            |            |            |
|------------|------------|------------|
| PENDOWN    | RIGHT 90*  | PENUP      |
| LEFT 90    | PENUP *    | FORWARD 15 |
| FORWARD 15 | FORWARD 15 | RIGHT 90 * |
| RIGHT 90   | PENDOWN    | PENDOWN*   |
| FORWARD 65 | FORWARD 50 | FORWARD 65 |

\*Denotes interchangeable statements

1 mark for every pair of instructions [6]

- 7 (a) =SUM(B3:D3) or =B3+C3+D3 [1]

- (b) =MAX(B3:B6) [1]

- 8 (a) **Two** from:  
 Temperature sensor  
 Number pad  
 Remote control  
 Touch screen [2]

- (b) **Three** from:  
 Microprocessor stores required temperature as preset value  
 Microprocessor receives temperature from sensor  
 Microprocessor compares temperature from sensor to pre-set temperature  
 If temperature is lower than preset value microprocessor sends a signal to the actuator...  
 .... to turn heater on  
 If higher than preset value microprocessor sends a signal to turn heater off [3]

Page 4	Mark Scheme	Syllabus	Paper
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- 9 (a) (i) Alphanumeric/text [1]
- (ii) Boolean/logical [1]
- (iii) Numeric/integer [1]
- (b) Format/picture/length [1]
- 10 (a) **Three** from:  
Humidity  
Temperature  
Pressure  
(Sun)light  
Rainfall [3]
- (b) (i) Sensor measures analogue data  
Computer works in digital [1]
- (ii) Analogue to digital converter [1]
- (c) **Three** from:  
Computer can take readings during holidays  
Computer (readings) are more accurate  
Students might forget to take readings/readings can be taken at regular intervals  
Readings can be taken more frequently  
Readings can be taken any time of day or night  
Can produce graphs more quickly/automatically [3]
- 11 1. **Collect information about the existing system.**  
2. **Design a file structure.**  
3. **Develop the new system.**  
4. **Implement the new system.**  
5. **Evaluate the new system.**
- 5 in correct order = 5  
Any 4 in the right order = 4 marks  
Any 3 in the right order or position = 3 marks  
Any 2 in the right order or position = 2 marks  
**Collect information...** first (the rest wrong) or **Evaluate the system** last (the rest wrong) = 1  
**Just having one item in correct position (except collect or evaluate) = 0** [5]

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12 (a)

	✓
Text	
Integers	
Sound	✓
Decimal numbers	
Video	✓
Graphics	

[1]

[1]

- (b) **Two** from:  
Microphone  
Sound card  
Speakers

[2]

- (c) **Two** matched pairs from:  
Desk Top Publishing  
Producing the layout/template of the brochure

Database  
List of characters/actors

Spreadsheet  
Prices/list of refreshments and costs

Word processing  
Type/enter/create/produce the text for the brochure/don't allow write (up) the information

Image editing software/graphics package  
To prepare images for inclusion in brochure [4]

- 13 (a) **Two** from:  
Switched hub  
Has many computers connected to it  
Can learn/store addresses of each computer in that part of the network  
Can direct data to specific computers/devices

[2]

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(b) **Two** from:

- Connects network/computers to the internet
- Uses IP addresses
- Transfers data between networks
- Connects LANs/networks together

[2]

14 (a) **Three** from:

- Hackers may read the data and pass it on/find out embarrassing details and pass it on
- Hackers may delete the data/remove accounts
- Hackers may amend the data/change how much money they have in their account
- Hackers may create new accounts to defraud the bank
- Transfer money from customer's accounts to hacker's own account

[3]

(b) **Three** from:

Username identifies the customer to the system/Passwords – customers can't access the system if they don't know the password/unauthorised users will not know the password/memorable data – only people who know the memorable data will be able to access the account

Biometric methods are used because they are unique to each customer so only customer with specific biometric features can access that account

TAN – only customers with the phone that the TAN has been sent to and know the password can access the account

Two factor authentication – only people with device, card and PIN can access the account

Magnetic stripe/smart card/Dongle/card with chip – prevents people without cards/readers/dongle accessing system

[3]

15 (a) **Two** from:

- Fewer printers are needed
- Fewer scanners are needed
- Can access work from any computer
- Data can be shared between computers/data can be accessed by one computer from another more easily
- Software can be shared/updated more easily
- All computers can access the internet /through one connection

[2]

(b) **Three** from:

- Greater risk of hackers
- Greater risk of viruses
- The significant cost of extra equipment
- When the network is down, cannot use network computers/can still use standalones
- Print queues can be long

[3]

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(c) **Six** from:

*Advantages*

Laptops can be transported from room to room more easily  
 Safer – won't trip over loose cables  
 Can use laptops outside the classroom if required  
 Can be used even if there's a power cut

*Disadvantages*

Laptops may be more expensive than network PCs.  
 Display is smaller  
 Laptops will need recharging periodically  
 Have to be in range of a network point

One mark available for reasoned conclusion

Must have at least one advantage and disadvantage to gain full marks

[6]

**16** **Six** from:

*Advantages*

Less danger of mugging  
 Don't have to waste time travelling/queuing  
 Don't have to spend money on travelling to shops  
 Greater choice of goods  
 Can shop when shops are closed  
 Easier to search and find what you are looking for  
 Comparison websites will find you the cheapest option  
 Goods may be cheaper as shops have less staff to pay/less premises to rent  
 Don't have to pay car parking charges  
 Don't have to pay for shopping bags  
 Vouchers/special deals are often only available online/online discounts

*Disadvantages*

Lack of socialising/social contacts  
 Hackers may intercept data and defraud customer  
 Deprived of personal touch  
 Cannot see/feel goods in reality  
 More vulnerable to phishing/pharming  
 Goods sometimes don't arrive/substitute goods may be sent/take longer to arrive/may be delivered to wrong address  
 Shipping charges  
 ISP costs/Possible high connection charges  
 Initial cost of equipment/phone line  
 Postal costs of returning items

One mark available for reasoned conclusion

Must have at least one advantage and disadvantage to gain full marks

[6]

Page 8	Mark Scheme	Syllabus	Paper
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**17 (a) Five from:**

Current system is observed:  
 Mechanics/potential users interviewed  
 Mechanics/potential users given questionnaires  
 Gather information from manufacturers/about current system/from experts  
 Existing documents examined  
 Inputs, outputs and processing of the current system determined  
 Problems with current system identified  
 User and information requirements identified  
 System specification decided  
 Knowledge base designed  
 Inference engine designed  
 Rules base designed  
 User interface designed  
 Hardware chosen

[5]

**(b) Two from:**

Medical diagnosis  
 Mineral prospecting  
 Tax  
 Careers  
 Chess games  
 Animal/plant classification/identification  
 Computer fault diagnosis

[2]

**18 Two problems from:**

Headaches  
 Eyestrain  
 Backache

**Two matching methods from:**

Use anti-glare screen (headaches/eyestrain)  
 Take regular breaks (all)  
 Use straight backed chair/ergonomic/maintain good posture (backache)

[4]

**19 (a) Three from:**

Normal data  
 Abnormal data  
 Extreme data  
 Live data

[3]

**(b) Benefit – cheaper as only one set of workers needed**

[1]

Drawback – have no backup system to fall back on

[1]



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(c) **Four** descriptions from:

Pharmacist can save queries about details of medicines

Pharmacist can create reports of stock

Pharmacist can create charts of sales

Pharmacist can sort medicine records

Pharmacist can enter data using Input forms

Pharmacist can derive costs of re-ordering medicines using calculated fields

Description of how two tables could be linked by the pharmacist

[4]