



## **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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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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

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

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5	Fewer books can be borrowed.		[1]
	Libraries can stay open longer.		
	More information is more easily available to borrowers.	✓	
	More people work at the library.		[1]
	Nobody borrows books any more.		
	The librarian is automatically notified when books are late.	✓	

- 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]

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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]

12 (a)

	✓	
Text		
Integers		
Sound	✓	[1]
Decimal numbers		
Video	✓	[1]
Graphics		

(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:  
 Usernames identify 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]

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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]