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.

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.

CAMBRIDGE
International Examinations

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 ✔	False ✔	
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]

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]

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	✓
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]

(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]

(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]

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 break**s** (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]

(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]