

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.

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| | | | |
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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 ✓ | 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] |

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

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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]