0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/12 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 October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
1. A magnetic tape  B flash memory card  
   C blu-ray disc  D hard disc  

2. A disc drive  B laser printer  C light pen  
   D microphone  E TFT monitor  F web cam  

3. | Hardware | Software |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>virus checker</td>
<td>✓ [1]</td>
</tr>
<tr>
<td>keyboard</td>
<td>✓ [1]</td>
</tr>
<tr>
<td>chip</td>
<td>✓ [1]</td>
</tr>
<tr>
<td>mobile phone</td>
<td>✓ [1]</td>
</tr>
</tbody>
</table>

4. An inkjet printer is used to print high quality photographs  [1]  
   A graphics tablet is used to input freehand drawings  [1]  
   A keypad is used to input preset values into control systems  [1]  
   A multimedia projector is used to show slides  [1]  
   A joystick is used to control a flight simulator  [1]
5 Three matched pairs from:

User ID and one of password/PIN/ Memorable data

Password/PIN/ Memorable data has to be entered before access is gained/ Password/PIN can be changed frequently to avoid hackers guessing them/ Unsuccessful logins can throw you out of the system

Magnetic stripe/ smart card/ electronic key/ bar code system/ ID card

Has to be read before access is gained/ Prevents people without cards accessing system

Biometric data

Fingerprint/ retina/ iris/ face/ voice recognition used as input/ Biometric data is difficult to replicate/ is used because it is unique/ compared with those stored on the system

Firewall

Only allows known computers to access network/ prevents unknown computers accessing network

6 Three from:

Allows users to keep in contact/ communication/ connect with friends
Allows user to send messages to more than one friend/ to people overseas
Can search for people who you’ve fallen out of touch with/ people with similar interests
Can arrange meetings/ events/ visits to cinemas/ theatre with whole group
Can show photographs to whole group/ share photographs/ music/ videos
Can create and share personal profile
You can follow actions/ thoughts of others
Can write comments on other’s posts
Can have privacy controls
Can lead to cyber bullying

7 PEN DOWN FORWARD 70
FORWARD 80 REPEAT 6
RIGHT 90 FORWARD 30
PENUP RIGHT 60
FORWARD 60 ENDREPEAT
PENDOWN

1 mark for each correct statement

8 (a) Direct

(b) Chip reader/ magnetic stripe reader/ bar code reader/ OCR/ RFID
(c) **Two** from:

- More accurate/fewer mistakes
- Faster **data entry**

(d) **Three** from:

- The borrower’s file and book data files would be saved as separate tables
- Primary key/key field(s)/foreign key would be identified
- One mark is available for an appropriate example of the field which would be set to primary key
- This would be used to link the tables together

9 **Five** from:

- Video conferencing is a method of visual and audio communication between people at separate locations
- Webcams/small video cameras are used to input faces of participants
- Large monitor/projector to output faces of participants
- Microphones are used to input voices of participants
- Speakers are used to output voices of participants
- Router/broadband modem used to connect to internet
- Video conferencing software needed to link participants
- Employees are connected on-line/may need to access the Internet/WAN to work
- Images of the employees appear on the screen in real time
- Software is needed in each computer to operate the conference
- Employees can be heard by all the other employees in the conference
- You can take part wherever you are

10

- Back ache from bad posture
- Electrocution from touching bare wires ✔ [1]
- Fire from overloading electric sockets ✔ [1]
- Headaches from staring at the screen continuously
- Injury caused by tripping over trailing wires ✔ [1]
- RSI in the fingers

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11 (a) **Two** from:

- Humidity
- Moisture
- Light
- pH

(b) **Sensors send analogue data to computer**  
**Computer works in digital**

(c) **The preset value is the (required) value input by the user/already stored in the computer**

**Three** from:

- temperature is compared with preset value
- if lower than preset value computer switches on heater
- if lower than preset value computer shuts windows
- if higher than preset value computer switches heater off
- if higher than preset value computer switches fan on
- if higher than preset value computer opens window

12 (a) **Two** from:

- Bar code reader
- Key/number pad
- Weighing scales
- Touch screen
- RFID reader
- Magnetic Stripe reader
- Chip and PIN reader

(b) **Four** from:

- The stock file is searched
- Until a match is found with the entered bar code number/product id number
- The number in stock of the matching record is read
- One is subtracted from the number in stock
- The number in stock is compared with the re-order number
- If it is equal to the re-order number
- More goods are automatically re-ordered
- The new value of number in stock is written back to the file

13 (a) **Three** from:

- Observation
- Interview
- Questionnaire
- Examining documents
### (b)

<table>
<thead>
<tr>
<th>Field name</th>
<th>Data type</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>First_name</td>
<td>Text</td>
<td>[1]</td>
</tr>
<tr>
<td>Family_name/second_name</td>
<td>Text</td>
<td>[1]</td>
</tr>
<tr>
<td>Phone number</td>
<td>Text</td>
<td>[1]</td>
</tr>
<tr>
<td>Worker_ID</td>
<td>Text</td>
<td>[1]</td>
</tr>
<tr>
<td>Wage</td>
<td>currency</td>
<td>[1], [1]</td>
</tr>
</tbody>
</table>

### (c) Three matched pairs from:

- A letter followed by five digits
  - This should be accepted by system

- Two letters followed by four digits
  - This would be rejected by format check

- Six digits
  - This would be rejected by format check

- Six letters
  - This would be rejected by format check

- Fewer or greater than 6 characters
  - This would be rejected by a length check

(1 mark for item, 1 mark for reason) \[6\]

### 14 (a) Two from:

- A copy of file(s)
- On an alternative medium
- In case anything happens to original
- Usually removed from the location of the computer \[2\]
(b) Six from:

- Magnetic tape is less expensive per unit volume of memory
- Tape is slower to access data than magnetic disc
- Tape requires a special drive...
- ...but these often come as standard with file servers
- Tapes are easier to store
- Tapes are easier to remove from premises if needed

One mark is available for a reasoned conclusion [6]

15 Four from:

- Phishing is done by email
  can invite you to go to a website/respond to an email
- Pharming is done by installing malicious code on a PC or server
  redirects a genuine website’s traffic to the fraudulent website [4]

16 Five from:

Advantages
- Safer environment
- Don’t need to lift heavy loads/Fewer manual tasks to do
- Cleaner/healthier working environment
- Can lead to retraining to improve skills
- More technical jobs available

Disadvantages
- Can lead to unemployment
- Deskilling can occur

One mark is available for a reasoned conclusion [5]

17 Seven from:

- Danger of accessing inappropriate websites
- Can take long time to find required information
- Have to have internet connectivity/computer/phone line/modem
- Internet tends to be up date
- Internet has vast amounts of information/wide range of information
- Speed of search only if referring to use of search engine
- Can access biased/inaccurate websites
- Lack of expertise leads to inefficient searching
- Easy to plagiarise information [7]