

**MARK SCHEME for the October/November 2012 series**

**0417 INFORMATION AND COMMUNICATION  
TECHNOLOGY**

**0417/13**

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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6

Instructions must be typed to get a computer to carry out an action	✓	
Icons represent programs		✓
It is more important that users understand how a computer works	✓	
Menus are offered to help choose an action		✓

[4]

7 **Four** matched pairs from:

INSTRUCTION	MEANING
FORWARD <i>n</i>	Move <i>n</i> forward
BACKWARD <i>n</i>	Move <i>n</i> backward
LEFT <i>t</i>	Turn left <i>t</i> degrees
RIGHT <i>t</i>	Turn right <i>t</i> degrees
PENUP	Lift the pen
PENDOWN	Lower the pen

1 for instruction  
1 for meaning

[8]

8 (a)

Humidity	✓
Temperature	✓
Pressure	
Wind speed	
Light	✓
Wind direction	

[3]

(b) Measurement is the monitoring of physical variables without the microprocessor taking action

[1]

Control is when the microprocessor takes action depending on sensor readings

[1]

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(c) Four from:

- Computer (readings) are more accurate than students
  - Students might forget to take readings/readings can be taken at regular intervals
  - Computer takes more reliable readings
  - Readings can be taken/control can be carried out more frequently
  - Readings can be taken/control can be carried out any time of day or night
  - Computers can respond to changes immediately/quicker than students
  - Students might be unavailable to take readings during school holidays/computers can work continuously/without taking a break
- [4]

9 (a) C5 [1]

(b) Any cell from e2:e6 [1]

(c) 6 [1]

(d) =b2-c2 [1]

(e) Two from:

- Highlight D2 and click copy
  - Highlight D3:D6 and click paste
  - OR**
  - Highlight D2 and manoeuvre to bottom right hand corner of D2
  - Using fill handle/little black square/cross drag down to D6
  - OR**
  - Highlight D2:D6
  - Click on fill then down
- [2]

(f) Two from:

- Simulations
  - Mathematical models
  - Scientific models
  - Civil engineering models
- [2]

(g)

The real thing may need to large a timescale	✓
Computer models waste a lot of raw materials	
The real thing is quicker to build	
If a computer model fails it doesn't need rebuilding	✓
Once a computer model is built it doesn't cost a lot to run	✓
A model doesn't cost anything to make	

[3]

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10 (a) Two from:

- Only one printer is needed
- Only one scanner is needed
- 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) Router/modem [1]

(c) Advantages – **two** from:

- Can communicate with other companies by email
- Can use the internet to place orders
- Can use the internet to buy materials
- Can hold video conferences
- Can create own website to publicise company

Disadvantages – **two** from:

- Workers may access undesirable sites
- Workers may waste time playing games/going on social network sites/updating their blog/online shopping/banking
- Viruses/malware could be downloaded
- Could make the company susceptible to hackers [4]

11 (a) **Three** from:

- Authentication techniques such as user names and passwords identify the user to the system
- Without authentication anybody would be able to access data
- Hackers would be able to amend/delete data without being prevented
- Would have to rely on other methods such as firewalls to prevent unauthorised access. [3]

(b) **Three** from:

- Causes data to be scrambled/encoded
- Requires an encryption key/software to encrypt
- Requires a decryption key/encryption software to decrypt
- Results in data which is not understandable/readable
- Protects sensitive data...
- ... from being understood if it falls in to the wrong hands [3]

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**12 Spyware**

**Two** from:

- Software that gathers data from computers without the user realising
- It monitors and records all key presses
- It sends this information back to the hacker who sent it out

**Spam**

**Two** from:

- Electronic junk mail/sending of unsolicited emails
- Sent to everybody on a mailing list/many emails sent at once
- Can slow down networks
- Can fill up the receiver's mail box and therefore hard disk

**Social networking site**

**Two** from:

- Online communities of like minded users
- Enables users to share photos
- Enables users to communicate with each other
- Enables users to organise meetings
- Allows users to set up profiles

[6]

**13 (a)**

Field name	Data type
Race_ID	<b>Text</b>
<b>Race_length</b>	<b>integer</b>
<b>Name</b>	<b>Text</b>
<b>position</b>	<b>integer</b>

[7]

**(b) Format/Picture**

- Checks the data is of the format beginning with a letter and ending in three digits and is only four characters long.

[1]

[1]

**(c) Five** from:

- Appropriate spacing for each field
- Buttons to go forward/backwards
- Screen filled/not too much white space
- Drop down lists to choose an option (such as race length)
- Button to save data/submit/accept
- Clearly defined input area for each field
- Tick boxes/radio buttons to enter choices
- An easy to read font/font size
- A sensible font colour/background colour
- Easy to follow instructions for completing screen/help icon
- No overlapping of items

[5]

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14 (a) Two from:

- Smart phone
- Laptop with internet access
- Tablet computer

[2]

(b) Six from:

Advantages:

- Fewer bank tellers so less paid out in wages
- Less actual cash handled – fewer robberies
- Have access to a wider customer base
- Fewer branch offices needed – less spent on rates/rent/utilities
- Less money spent on security staff

Disadvantages

- Initial cost of hardware/software is expensive
- Need to retrain staff
- Loss of customers/more difficult to sell other services due to lack of personal touch
- Costs of system maintenance

Must have at least one of each to gain full marks

[6]

15 Four from:

- No embarrassment of not having sufficient funds
- Less time spent queuing
- Can get money any time of day or night
- Own bank may be further to travel to than nearest ATM
- Can use most ATMs/does not have to be own bank
- Have choice of languages so is easier to understand/be understood

[4]

16 Four from:

- You get immediate feedback
- You know you have the right person/don't have to worry that you've got the wrong email address
- You can ask questions immediately based on feedback/carry out an interactive conversation
- Less impersonal/less risk of upsetting recipient
- Can make yourself understood more easily
- You can see the other person's reaction

[4]