

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**MARK SCHEME for the October/November 2011 question paper  
for the guidance of teachers**

## **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.

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- 1 A Laser printer (1)  
 B Plotter (1)  
 C Multimedia projector (1)  
 D Monitor (1) [4]

- 2 Blu ray disc                      Graphics tablet (1)                      Inkjet printer  
 Motor                                      Optical mark reader (1)                      Speaker [2]

3

	True	False	
A magnetic stripe reader is an example of hardware	✓		(1)
A memory stick is an example of software		✓	(1)
A word processor is a form of operating system		✓	(1)
A CD has a greater storage capacity than a DVD		✓	(1)

[4]

- 4
- |                   |   |   |
|-------------------|---|---|
| Fixed hard disc   | → | Making backups of file servers                  |
| Flash memory card | → | Transferring files from one computer to another |
| Magnetic tape     | → | Storing software sold by a company              |
| Pen drive         | → | Storing data which needs to be accessed quickly |
| DVD ROM           | → | Storing photographs in a digital camera         |
- [5]

- 5 (a) *Birthday*                      Date  
 (b) *Gender*                      Boolean  
 (c) *Home phone number*                      Text  
 (d) *Number of brother and sisters*                      Integer [4]

6

	True	False	
RAM is volatile	✓		(1)
RAM is used to store the startup instructions of a computer		✓	(1)
The data in ROM is easier to change than that in RAM		✓	(1)
ROM is used to store the data the user is currently working on		✓	(1)

[4]

7 FORWARD 50  
 PENUP  
 -----  
 FORWARD 40  
 PENDOWN  
 -----  
 FORWARD 60  
 PENUP/RIGHT 90  
 RIGHT 90/PENUP  
 FORWARD 60  
 RIGHT 90/PENDOWN  
 PENDOWN/RIGHT 90  
 FORWARD 80

1 mark for each 2/3 statements

[5]

8

Hub	✓	(1)
Printer		
Scanner		
Switch	✓	(1)
Bridge	✓	(1)
Monitor		

[3]

9

	True	False	
Paying for goods at an EFTPOS terminal		✓	(1)
Booking a holiday using a computer		✓	(1)
Producing credit card bills	✓		(1)
Processing cheques	✓		(1)

[4]

10 (a) **Three** from:

- Humidity
- Moisture
- Temperature
- Light

[3]

(b) **Five** from:

- Computer monitors sensors
- 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 windows
- Humidity is compared with preset value
- Moisture level is compared with preset value
- If lower than preset value computer switches on sprinkler
- If higher than preset value computer switches off sprinkler
- Light is compared with preset value
- If lower than preset value computer switches on light bulb
- If higher than preset value computer switches off light bulb

[5]

(c) **Three** from:

- More reliable readings taken at regular intervals
- Computers are more accurate than human beings
- Computers can work continuously/without taking a break
- Computers do not forget to take readings
- Computers can take readings more frequently
- Computers can respond to changes immediately/quicker than human beings

[3]

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11 (a) 3 [1]

(b) 5 [1]

(c) **Three** from:

The personal details file and test results files would be saved as separate tables

Primary key/key field(s)/foreign key would be identified

The 'Unique ID number' set to primary key would be used to link the tables together [3]

(d) **Two** from:

Data does not have to be typed in twice

Quicker to enter/update/edit data

Fewer errors are likely

Reduces storage requirements [2]

12 (a)

	True	False	
Defining field length is part of the design of the file structure	✓		(1)
Screen layouts are designed before the system is implemented	✓		(1)
The new system is evaluated before it is designed		✓	(1)
The existing system is analysed before the new system is designed	✓		(1)

[4]

- (b) Normal data – data within a (given) range/appropriate for that data type (1)  
 Abnormal data – data outside the range/of the wrong data type (1)  
 Extreme data – data on the boundaries of the range (1) [3]

(c)

Produce user documentation		
Design the new system		
Compare the solution with the original task requirements	✓	(1)
Analyse the existing system		
Identify any limitations of the system	✓	(1)
Identify any necessary improvements to the system	✓	(1)
Analyse the users' responses to the results of testing the system	✓	(1)
Produce technical documentation		

[4]

- (d) Technical documentation  
**Two** from:  
 So improvements can be made to system  
 To know how to repair system  
 To know how to maintain system [2]

- User documentation  
**Two** from:  
 Help users to learn/know how to use system  
 Help users to overcome problems [2]

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- 13 (a)** Router/modem (1)
- (b)** Email (1)
- (c)** Web browser (1)
- (d)** ISP (1) [4]
- 14 (a)** Encryption  
**Two** from:  
 Despite hackers being able to intercept data  
 Data is scrambled  
 So that hackers cannot understand/read the data  
 Need to have encryption/decryption key to make data readable/understandable [2]
- Passwords  
**Two** from:  
 Linked to username  
 Compared to stored data  
 Hackers cannot access data without knowing the password  
 Password can be regularly changed/robust passwords make it difficult for hackers to guess [2]
- Biometric data  
**Two** from:  
 Use of fingerprints/retina scans  
 Compared to stored data  
 Almost impossible to replicate [2]
- (b) Three** from:  
 Fewer cashiers/security staff needed – less spent on wages  
 Fewer branch offices needed – less spent on rates/rent/utilities  
 Less actual cash handled – fewer robberies  
 Cheaper to advertise  
 Lower postal charges  
 Have access to a wider customer base [3]
- (c) Three** from:  
 Less danger of mugging  
 Don't have to waste time travelling to bank  
 Don't have to spend money on travelling  
 Can bank at any time of day or night/can bank when banks are closed  
 Can use it anywhere if there's an internet connection  
 Can ask for a loan over the Internet without being embarrassed [3]

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**15 Six from:**

**Advantages**

- Can call meeting at short notice
- No need to pay travelling expenses
- Can work from home
- Will save time travelling
- Do not have to pay hotel expenses
- Do not have to pay for conference room facilities
- Safer as participants do not have to travel
- Don't have to transport/carry equipment/lots of documents/documents don't get lost in transit

**Disadvantages**

- Takes time to learn new technology/to be trained
- Difficult to have international meetings because of time differences
- Initial cost of hardware
- Equipment can break down/power cuts can stop conference
- Strength of signal/time lag/lip sync can be a problem/ connection can be lost/power cuts
- Loss of personal/social contact
- Legal documents cannot be signed

+1 for reasoned conclusion [6]

**16 Three 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 hacker's website

[3]

**17 Seven from:**

- Type in/use keyboard
- Use touch screen
- Scan Bar code/use bar code reader
- Swipe Magnetic stripe/magnetic stripe reader
- Use biometric methods
- OMR
- Chip reader

**Three max. for methods**

- Magnetic stripe quicker than keying in
- Bar codes more accurate than keying in
- Magnetic stripe more accurate than keying in
- Keyboard entry more robust than bar codes
- Keyboard can be used to enter additional data unlike bar code reader
- Magnetic stripe more robust than bar codes
- Biometric methods difficult to forge
- Biometric methods more accurate than other methods

[7]